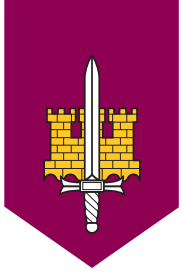

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Military Intelligence Analysis: Institutional Influence

Martin Bang

National Defence University

MARTIN BANG

MILITARY INTELLIGENCE ANALYSIS: INSTITUTIONAL INFLUENCE

Doctoral dissertation for the degree of Doctor of Military Sciences
to be presented, with the consent of the Finnish National Defence University,
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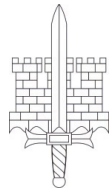

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MARTIN BANG

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Martin Bang: *Military Intelligence Analysis: Institutional Influence*

National Defence University, Finland
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To my three angels Maria, Teodor and Samuel

ABSTRACT

Intelligence is vital for the outcome of battles. As long as humans wage war, there will be a need for decision support to military and civilian leaders regarding adversaries or potential adversaries. However, the production of intelligence is neither easy nor without pitfalls. There is a need to better understand the predicaments of intelligence analysis.

Intelligence is bureaucratically produced as well as socially constructed and created in a distinct cultural context. The 'institution' captures these three aspects of influence. Therefore, with a particular focus on military intelligence, this thesis aims to deepen the understanding regarding institutional influence on intelligence assessments. The literature regarding intelligence has grown steadily over the last three decades. However, theories and frameworks aimed to understand the phenomenon are still sparse. This is even more true for literature regarding contemporary military intelligence. This thesis intends to contribute to bridging these research gaps. This is done by studying the Swedish military intelligence institution from several different perspectives: its rules-in-use, shared beliefs, and the incoming stimuli primarily related to conducting threat assessments. More precisely the thesis investigates the use of quantitative methods, doctrines (i.e. the formal rules), and shared beliefs connected to epistemological assumptions and threat assessments.

The main contribution of this thesis is that it establishes and describes a casual link between a military intelligence institution and an assessment, by drawing upon rules-in-use and belief systems and their effect on the mental model and consequently the perception of the situation connected to a cognitive bias, and thereby its effect on a given assessment. The thesis makes an effort to render intelligence studies more generalizable, by way of adopting the Institutional Analysis and Development (IAD) framework. The metatheoretical language of the IAD is a promising avenue for explaining and describing the institutional influence on intelligence assessments.

Keywords: intelligence analysis, military intelligence, institutions and threat assessments.

SAMMANFATTNING

Underrättelse är en avgörande komponent för utfallet av väpnad strid. Så länge människor krigar, kommer det att finnas ett behov av beslutsstöd till militära och civila ledare angående dess motståndare och potentiella motståndare. Produktionen av underrättelse är dock inte lätt eller utan fallgropar. Det finns där för ett behov av att öka förståelsen för de predikamenten kopplade till underrättelseanalys.

Underrättelse som produkt är byråkratiskt såväl som socialt konstruerad och skapas i ett distinkt kulturellt sammanhang. Konceptet "Institution" kan ses fånga alla dessa tre aspekter. Därför handlar det speciellt om militär intelligens, som handlar om att förstå det institutionella inflytandet på intelligensbedömningar. Den tillgängliga underrättelselitteraturen har ökat stadigt under de senaste tre decennierna. Dock gällande teorier och ramverk på området som syftar till att förstå fenomenet är det emellertid fortfarande lite gjort. Detta gäller i än högre utsträckning för det specifika området modern militärunderrättelse verksamhet. Avhandlingen avser att bidra till att överbrygga dessa forskningsgap. Detta görs genom att studera den svenska militärunderrättelseinstitutionen ur flera perspektiv. Dess regler-i-bruk, delad trossystem/övertygelser samt den inkommande stimuli(data/information) primärt kopplade till hur hotbedömningar genomförs. Mer exakt granskar avhandlingen användningen av kvantitativa metoder, doktriner (dvs de formella reglerna) och delade föreställningar kopplade till epistemologiska antaganden och hotbedömningar.

Huvudresultatet av denna avhandling är att det etablerar och beskriver en länk mellan en militärunderrättelseinstitution och de bedömningar som görs. Det går att se en direkt länk mellan de regler-i-bruk samt institutionens trossystem och deras inverkan på individens mentalmodellen. Detta sker genom att de rådande reglerna påverkar förekomsten av kognitivt bias vilket där med påverkar analytikerns uppfattning av en given situation. Avhandlingen har där med en ambition att göra studier i underrättelseanalys mer generaliserbara, genom att applicera och utveckla ramverket för institutionell analys och utveckling (IAD). Det metadeteoretiska språket i IAD är en lovande aveny för att förklara och beskriva det institutionella inflytandet på intelligensbedömningar.

Nyckelord: underrättelseanalys, militärunderrättelse, institutioner och hotbedömningar.

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Last but not the least, I would like to thank my family: my father who always has been my role model, my mother for always being there, my sister for her help throughout my school-age years and assistance in addressing my issues with dyslexia, my wife Maria who has always supported me and read all of my work, and finally my sons Teodor and Samuel who by their mere existence have helped me realize the total insignificance of this book in comparison to much more important things such as spending time with them and enjoying life.

LIST OF PAPERS INCLUDED

This thesis by Martin Bang is comprised of an introductory chapter and the following five publications:

I. Bang, Martin. 2016. Pitfalls in Military Quantitative Intelligence Analysis: Incident Reporting in a Low Intensity Conflict. *Intelligence and National Security* 31 (1), 49-73

II. Liwång, Hans, Marika, Erickson and Martin, Bang. 2015. An examination of the implementation of risk based approaches in military operations. *Journal of military studies* 5 (2), 1-27

III. Sigholm, Johan and Martin, Bang. 2013. Towards Offensive Cyber Counterintelligence: Adopting a Target-Centric View on Advanced Persistent Threats. In *Intelligence and Security Informatics Conference* (EISIC), 2013 European, 166–171.

IV. Bang, Martin. 2017. A Shared Epistemological View Within Military Intelligence Institutions, 2017. *International Journal of Intelligence and CounterIntelligence* 30 (1): 102–116

V. Bang, Martin and Liwång Hans. 2016. Influences on Threat Assessment in a Military Context. *Defense & Security Analysis* 32(3), 264-277

DIVISION OF WORK BETWEEN AUTHORS

The author was the sole author of papers [I] and [IV] the first author in paper [V], and third author in paper [II]. In paper [III] the work was divided equally between the two authors.

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1

INTRODUCTION

On June 27, 1942, 35 merchant ships and a 41 warship-strong escort left Iceland and headed towards North Russia. The convoy named PQ-17 was part of the Allied forces Arctic convoys during World War II, which supplied the Soviet Union with much needed goods in its battles with Hitler's Germany. Of the 35 merchant ships, only 11 arrived at the final destination (Lewellyn-Jones 2006, 57). The reasons as to why the Arctic convoy met such a disastrous fate as it did are largely the result of the intelligence analysis: how the analysis was conducted, what was taken for granted, what was included, and what was not.

Based on Beesly's research on the case, we know today quite well what happened. The Brits were far superior to the Germans on the signal intelligence side, the Enigma Cipher was broken, and the British naval attaché in Sweden was receiving a considerable amount of intelligence decrypted from the landline going from Germany to Norway via Stockholm. On 18 June, one such message was sent from Stockholm to London. The message contained information on the next arctic convoy as well as the German plan of attack and the composition of the force that was to conduct the attack. The sizeable force included the Tirpitz, a Bismarck class Battleship (Beesly 2013, 301–2). The message was accurate and was validated as reliable. However, what the message did not include was that Hitler had ordered that the Tirpitz was to avoid getting damaged by the Allied carriers and aircraft and that Tirpitz was not to attack another convoy unless its escorting aircraft carrier had been sunk or disabled. His order was a consequence of the incident, a couple of months before, when Tirpitz' sister ship Bismarck had suffered significant damage and sunk. Hitler was not alone in learning from the Bismarck incident; the British Admiralty had drawn the conclusion that at least two modern battleships were needed to deal with Tirpitz, something the escort was lacking. Consequently, the British were convinced that if the Arctic convoy was detected and if the Tirpitz was involved in the attack, the escort would not be sufficient and a disaster would be inevitable.

On 1 July, Luftwaffe spotted the Arctic convoy the day after the German submarines had also made contact with it. Based on the intercepted and decrypted German radio transmission the following message was sent to the convoy:

> It appears certain Scheer has moved northwards from Narvik, probably accompanied by the destroyers. Movement of Lützow is uncertain but she was independent of Scheer. Tirpitz and Hipper may have left Trondheim area since 0001/3. (Beesly 2013, 305)

It was decided that there was no time to wait for reliable information to verify the warning, and the assumption was that a direct confrontation with Tirpitz and the rest of the German force would end in disaster. It was decided, against praxis, to

separate the escort from the convoy and to let the escort return to port while the convoy continued to its final destination.

What does this case tell us? The problem is that intelligence analysis is seldom simple and there are almost always uncertainties as well as ambiguities. In the case of PQ-17, several contributing factors led to the failed assessment and poor decisions made by the Allied forces. There were problems separating facts from assumptions, understanding the limitations of their own collecting capabilities (both technical and human), and communicating within their own organizations regarding uncertainties and their own underlying assumptions on which assessments were built. The common denominator here is that all of these factors were part of the intelligence analysis, and in particular, how available data was interpreted and assessed.

It is always easy to be smart in retrospect. Intelligence is, simply put, a knowledge product. Intelligence analysis is primarily a cognitive process, an activity which is mainly performed inside an analyst's own head. However, it is also a cognitive action conducted in a given and specific social context. This context influences how an assessment is conducted and, subsequently, the outcome. An interesting question in the PQ-17 case is whether the same assessments and decisions would be made if the same information was made available to the same individuals but in another organizational setting. Or in other words, which parts of the assessment and analysis, if any, are influenced by institutions? Institutions are the rules, norms, strategies, and beliefs we share between individuals.

Even if we can assert that the institution in which intelligence is produced is a central part of intelligence analysis, there is a need to understand intelligence analysis as an action. Intelligence as such is an ancient practice. Over 2500 years ago, Sun Tzu wrote in the *Art of War*, "If you know the enemy and know yourself, you need not fear the result of a hundred battles" (Sun Tzu 2002, 62). As long as humans wage war, there will be a need to know what your adversary is planning to do and to plan your own actions accordingly. However, modern intelligence and the activities seen today have a much shorter history, more precisely, since the beginning of the twentieth century. Jennifer Sims writes, "Intelligence has made a dramatic difference to the outcome of battles" (2009, 58). We can ask ourselves how the world would look today if the enigma code had not been broken, if Pearl Harbor had been foreseen, if intelligence had not been received during the Cuban missile crisis, or if the Iraq assessments regarding weapons of mass destruction had produced different conclusions prior to the invasion of 2003. Military intelligence can also have a great impact on political conflicts, as the Cuban missile crisis illustrated. Intelligence is one of the few tools in the military toolbox that can both help prevent war and help to win them.

1.1 Research question

The outset of this thesis began with an ambition to better understand intelligence analysis, to open the black box. The first question that needs to be addressed then is: what is the central unit of analysis? The exploratory part of this thesis resulted in the definition of intelligence as "bureaucratically produced as well as socially con-

structed and created in a distinct cultural context" (Article I). In order to be able to understand intelligence analysis, one must know how it is socially constructed, how it is bureaucratically produced, and how the distinct culture influences the process and the outcome. The concept of institution captures these three aspects. Therefore by studying the notion of an institution and how it is influential we can better understand intelligence. Therefore, the overarching research question for this thesis is:

How do military intelligence institutions influence intelligence analysis?

1.2 Thesis design and research approach

The research design of this thesis has had a sequential structure and can be seen as a two-step process. Since the aim is to better understand intelligence analysis, there is a need to understand what affects the analysis. This process made use of an inductive research approach, moving from specific observations to broader generalizations and theories. The first step aimed to identify the central independent variables affecting the outcome of intelligence analysis. The second step used these findings for theory development and testing in order to identify the causal relationship between the independent variable (i.e., institution) and the dependent variable (i.e., the assessments produced as an outcome of the intelligence analysis). There is also a need to understand the mechanism(s) between the dependent and independent variables, and to establish counterfactual conditionals based on the dependent variable. To do this, a theory-developing case study was conducted, describing the causal mechanism of this influence in a given situation; the case study is presented in Chapter 4 in this introductory chapter of the thesis. One of the rules-in-use from the description of the mechanism was tested in an experiment in order to identify the counterfactual conditional (see Article V). The case also directs the research to one specific part of the exogenous variables, and this is investigated and discussed in Article IV.

Article III can be described as a concept article in which a tentative solution is given to a problem in military counterintelligence. Article III was not directly part of the research design but helps problematize the issue and illustrates the link between the incoming stimuli and analysis. Therefore, this article can be seen as an integrated part in understanding the institutional influence on assessments.

One delimitation worth mentioning here is that this thesis focuses on intelligence as support to military operations. It should also be noted that threat assessments have a central role in all of the included articles, with the exception of Article IV. Threat assessments should not be seen as delimitation but rather as a part of the operalization and case selection. The rationale behind studying threat assessments is based on the fact that it is a routine activity for many military intelligence analysts. It is also, in contrast to many other activities, a somewhat limited analysis with similar objectives and boundaries over time. This means that the exogenous variables can be more easily isolated and analyzed.

The first step of the research approach begins with the two articles (I and II) which in unison direct the research to the central unit (level) of analysis, the intelligence institution. The second step includes Articles IV and V as well the supporting case

study. The core findings of the supporting case study are discussed in Chapter 4 (which has not been previously published). The theoretical framework that was used to understand the mechanisms of how institutions influence assessments is presented in Chapter 2. The aim of the theoretical framework is to act as a lens for understanding and describing the exogenous variables of the institution, which influence the assessment. In Article V, part of this framework is tested and in Article IV a comparative study is conducted aimed at providing insight on the variable 'shared beliefs' as presented in the framework, as well as discussing generalizations to other intelligence institutions

The framework presented in Chapter 2, in this introductory chapter, can be regarded as the core of this thesis since it illustrates how different texts included in the thesis contribute to understanding the relationship between intelligence institutions and assessments (see figure 1). The framework illustrates how an institution influences assessments via the mental model of the analyst(s) and the variables influencing the mental model. The framework addresses three central components: the rules-in-use, the shared beliefs of an institution, and the incoming stimuli. Article I and II show how assessments are influenced by an institution and, in particular, by the formal and informal rules-in-use. Although the concept "formal and informal rules" are not used in the articles. Article III is connected to the effect of the incoming stimuli both as an effect on the analysis and how to achieve it.

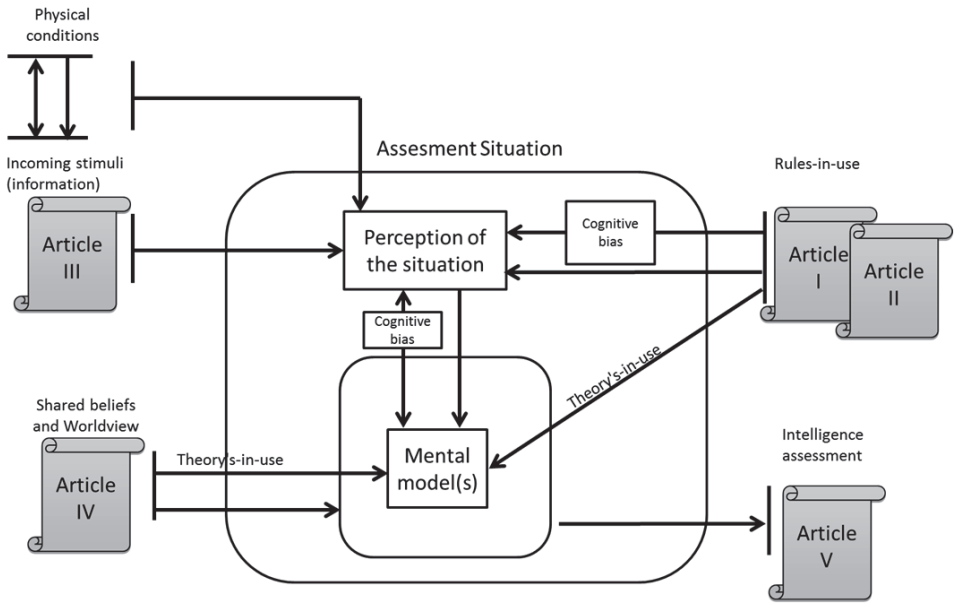


Figure 1: A figure of how the different articles of this thesis are connected and contribute to understanding the relationship between intelligence institutions and assessments.

Article IV is connected to the belief system and its possible impact on the assessment, through formal rules in the form of doctrines. In the supporting case study, a model of a specific intelligence assessment is created which show the mechanism of the influence. In Article V, one of the rules-in-use from that case study is tested empirically in an experiment.

1.3 Structure of this thesis

This thesis is divided into two parts. The first part is this introductory section which consists of five chapter. The second part includes the five articles, and constitutes the main body of this thesis.

The first part starts with Chapter 1 where the problem and the research objectives are introduced as well as the presents an outline of the thesis. Chapter 2 presents the theoretical foundation of this thesis with a focus on how the concepts of institution and intelligence overlap and complement one another. In addition, a framework for understanding the institutional influence mechanism on assessments is presented. In Chapter 3, the methodology for this thesis is presented and discussed. In Chapter 4 the core findings from a supporting case study are given. Chapter 5 includes the main findings from each of the five articles. In Chapter 6, the findings from the articles are discussed as a whole, with a focus on the contributions to theory development made in this thesis.

2

THEORY AND FRAMEWORK

The aim with this chapter is to give the readers the fundamental theoretical foundation for understanding the articles and the concluding discussion presented in chapter 6. The main questions addressed here include: What is intelligence and how is it produced? What is an institution and how does it influence our beliefs and actions? These questions are connected to the overarching research question: How do military intelligence institutions influence analysis. In an attempt to provide a theoretical foundation for answering these, the institutional and the intelligence studies perspectives have been used to create a theoretical framework for analyzing institutional influence on intelligence assessments. Yet first, this chapter begins with a discussion on the concept of intelligence.

At the core, intelligence is considered to be some type of product or activity with the purpose of delivering decision support to civilian leaders or military commanders. Military intelligence, as such, is an activity conducted by governments. Therefore, intelligence activities can be seen as a specific form of public administration, a connection which has been argued before (Davies 2010). The theoretical foundations of this thesis can, therefore, be seen as standing on two legs: public administration and intelligence studies. To some extent this thesis can then be defined as having an interdisciplinary approach, depending on how the term "discipline" is defined or how the boundaries between different disciplines are drawn. It can be questioned to what extent intelligence studies and military science are their own disciplines. However, there is a stronger distinction between political science and psychology, although it is not unusual to combine these, as in political psychology (See, for example, The Oxford Handbook of Experimental Political Science) (Druckman et al. 2011). Whether or not this thesis can be defined as an interdisciplinary is less important, since the benefits of drawing upon different perspectives has enriched this work, although not without challenges.

The positive aspects of multi-, intra- and cross-disciplinary approaches are numerous (Nissani 1997) and the acceptance for conducting such research is growing. However, there are pitfalls. Patai and Koertge write about the risk for "interdisciplinary opportunism" in which such approaches have been conducted uncritically and in a random manner (1995). One of the problems is conflicting concepts, in particular concepts connected to ontological assumptions which are not always clear to a novice in the field. In this thesis, this became evident regarding the concept of a belief system (see section 2.3 Model of the individual for a discussion regarding the concept). Another risk is that recent changes in the field are hard to detect and the researcher is more or less forced to stay in the mainstream of the field. In turn, research that combines different views needs to pay extra attention to the definition of central concepts. In the case of this thesis, that means the concept of intelligence.

2.1 Intelligence studies and military intelligence

Intelligence studies as an academic discipline and research subject have increased tremendously over the past 25 years. This is in part a consequence of the increased openness triggered by the end of the Cold War (Gill 2010, 43; Warner 2013; Scott and Jackson 2004). Since 2000, terrorist attacks both in the USA and Europe have acted as catalysts. Much of this attention has been geared toward research on intelligence, legal aspects, and organizations.

However, even though research on intelligence is growing, academic development on the subject has been slow. In the 1950's one of the forefathers of intelligence studies wrote that that the U.S. intelligence community was missing professional literature (Kent 1955). Five decades later Bruce and George write: "Today, though there is surely a larger body of general writing on intelligence, most professional intelligence analysis still shares Kent´s complaint" (2008b, 1). Further, they argue that this is still the case because much of that written in the field has focused on past and current intelligence failures or sensational intelligence operations (Bruce and George 2008b).

Another critique of intelligence studies is that much of the available literature fails to support cumulative development (Marrin 2016; Thomas 2008). Marrin argues that the absence of proper literature reviews has led to a field where many researchers repeat what has already been written (2011, 150). One of the reasons for this, according to Warner, may be that intelligence studies as a discipline lacks a language or terminology (2009). Intelligence studies is a combination of several other disciplines, primarily political science, history, psychology, and sociology. This has allowed for diversity in the literature but may also be one reason as to why different researchers have difficulties using and building upon previous models and theories. To some extent, it is a clash between descriptive and explorative disciplines. However, the last ten years have witnessed several so-called state-of-the-art publications, which can be seen as a vital step in overcoming this dilemma. These publications are evidence that the field of intelligence studies, although still young and a protoscience, has started to accumulate a significant amount of research conducive to producing high quality publications. These publications includes, for example, include: Routledge Companion to Intelligence Studies (Dover, Goodman, and Hillebrand 2013), Analyzing Intelligence (Bruce and George 2008a) The Oxford Handbook of National Security and Intelligence (Johnson 2010) and Handbook of Intelligence Studies (Johnson 2006).

Although the literature is growing, it is not expanding in all areas; the development of theories regarding intelligence activities and processes is not reflected in this increase and is still an underdeveloped area (Gill, Marrin, and Phythian 2008). Another area that has been neglected academically is the specific field of intelligence support to military operations despite the increase in the available literature (Johnson 2014, 10; Thomas 2008, 141). For example, in Intelligence and National Security, a key journal in the field, only two articles related to military intelligence were published during the period 2006-2011 (Johnson 2014). In his article "The Development of Intelligence Studies," Johnson sees one specific area as under-utilized, but with potential; that is the method of interviewing intelligence officers upon their

return from deployment (Johnson 2014, 13). This method has been utilized in this thesis (see Article I and the supporting case study in chapter 4).

Arguing that intelligence literature, in particular military intelligence, is sparse is only a partial truth. In House's book, Military Intelligence 1870-1991: A Research Guide, he found almost 900 articles or books on the subject published during the 121 year time period (House 1993). Although the number appears to be large, it is on average only eight publications per year, the majority of which are historical case descriptions. In short, there is still much to do especially in the area of empirical studies on contemporary military intelligence.

Several scholars have written that there is a lack of theories regarding intelligence processes and activities (Gill, Marrin, and Phythian 2008). This is true on one level; there are few theories or frameworks explicitly developed for intelligence as a field. To some extent it can be understood as a version of the "street light effect". The lack of theory can be seen rather as a consequence of not asking the relevant research questions and, thereby, not adapting the existing models and theories to an intelligence context. Gill expresses that there is no need to re-invent the wheel; numerous theoretical approaches that are suitable already exist (2010, 43). It might therefore be more appropriate to talk about theories not in use or not applied, than a direct lack of them.

The notion of a lack of theories is also connected to how theory is defined or the type of theory investigated. Betts stated already 40 years ago that there was a lack of normative and positive theories but that the descriptive theory of intelligence was well developed (1978, 62), something which is even true today. But although the literature is sparse, it is not non-existent. Zegart, Davies, Eriksson and Sims, to name just a few, all have made direct normative or positive theoretical contributions to the field (Davies 2012; Eriksson 2013; Sims 2009; Zegart 2000). The situation is also changing for the better as Warner states:

> The partial opening of intelligence files…prospective theorists have finally gained the raw material of hypotheses. Perhaps as important, scholars engaged in this enterprise began to compare findings, debate results, and build on one another's insights. The growth of intelligence theory had become self-sustaining (Warner 2013, 31–32).

One area that is often forgotten in the discussion is frameworks regarding the intelligence process which is a well-developed area where the intelligence cycle has a special status (see section 2.1.2). Descriptive research regarding intelligence failures is an especially well-developed area where much has happened over the last three decades since Betts' statement (see, for example, Jervis 2011). Although the majority of studies on intelligence failure give one or several influencing factors from a positivistic viewpoint, they can be viewed as a rudimentary framework rather than actual theories. Kahn captured it well when stating that although several intelligence theories (or those claiming to be theories of intelligence) exist, they do not offer predictions or explanations that can be tested (2001, 79). Real predictions in social science are not realistically achievable, but that does not mean that a search for causal relation is fruitless, especially if a probabilistic approach is taken.

2.1.1 Definition of intelligence

> 'When I use a word,' Humpty Dumpty said, in rather a scornful tone, 'it means just what I choose it to mean — neither more nor less.'
> 'The question is,' said Alice, 'whether you can make words mean so many different things.'
> 'The question is,' said Humpty Dumpty, 'which is to be master — that's all.' (Carroll, *Through the Looking-Glass*, p. 364)

The most essential part of any theory of intelligence is regarding the definitions of the concept intelligence: What is the phenomenon we want to understand and explain? There exists a plethora of definitions of intelligence and several articles have been written on the subject (Wheaton and Beerbower 2006; Troy 1991; Breakspear 2013; Warner 2002; Lowenthal 2011). Lowenthal notes in the book *Intelligence: From Secrets to Policy*:

> Virtually every book written on the subject of intelligence begins with a discussion of what "intelligence" means, or at least how the author intends to use the term. This editorial fact tells us much about the field of intelligence. (Lowenthal 2011, 1)

Although there are many definitions, clusters can be formed with clear dividing lines. The dividing line for the concept of intelligence is between those who consider intelligence to be a specific form of knowledge and those who perceive it as a set of activities connected to the production of this information and knowledge, or a combination of these two. This division has existed among scholars since the 1950's when intelligence studies started to form as an academic field. Bimfort's definition of intelligence can use to exemplify this:

> Intelligence is the collecting and processing of that information about foreign countries and their agents which is needed by a government for its foreign policy and national security, the conduct of non-attributable activities abroad to facilitate the implementation of foreign policy, and the protection of both process and product, as well as persons and organizations concerned with these, against unauthorized disclosure (Bimfort 1958, 78).

His definition can be seen in contrast to the one used by Sherman Kent, one of the founders of intelligence studies, who defined intelligence as:

> Intelligence, as I am writing of it, is the knowledge which our highly placed civilians and military men must have to safeguard the national welfare. (Kent 1966, VII).

It is obvious that there are large discrepancies between the definitions. However, Kent's definition as a specific form of knowledge is, in fact, included in Bimfort's product.

Intelligence studies as a separate subject is an unresolved issue. There is disagreement regarding the core phenomena and a lack of consensus about the concepts.

Even if difference of interpretation are accepted and generally encouraged in academia, this case contains deeper divisions than the norm. This lack of common understanding of the core phenomena has been seen as one of the largest obstacles in intelligence studies as a subject hindering its potential to evolve (Wheaton and Beerbower 2006).

The first question that may be asked is: Is this really a problem? Goertz writes that concepts are the fundamental buildings blocks of our theories (2005). It would then hold that an unclear definition of intelligence would result in fruitless attempts to formulate theory and framework around the subject since they would be standing on an unstable foundation. It might also be seen as one reason why intelligence studies are perceived, as mentioned previously, is struggling to become cumulative, at least in regard to theory development. In short, if the definition of intelligence is going to be useful in academic circles, it needs to be able to separate intelligence and non-intelligence activities as a separate phenomenon.

A definition of a concept needs to have a purpose and a clear understanding of how the term is going to be used. It is here it becomes blurry, because the reason remains unclear why the definition of intelligence is needed. As stated above, intelligence as a concept is a vital building block in theory development regarding intelligence as a phenomenon. If the argument is followed by a theory based on a definition of intelligence similar to Bimfort's and what he defines as counter intelligence (i.e., "non-attributable activities abroad"), there will also be a need to be able to explain extremely different phenomena. In the mind of the author, this is not the main objective in the scholarly debate regarding the definition of intelligence. The definition is primarily for classifying research and giving the text a correct label. Hence, inconsistent definitions are primarily a problem for intelligence studies and the development of it as a subject, not for the specific research itself. However, a large drawback appears when it comes to generalizations; for example, when cases of intelligence failures are studied in comparison to other cases within the same phenomenon.

Lowenthal's definition, which has much in common with Bimfort's, can be seen as an example of this type of classification:

> Intelligence is the process by which specific types of information important to national security are requested, collected, analyzed, and provided to policymakers; the products of that process; the safeguarding of these processes and this information by counterintelligence activities; and the carrying out of operations as requested by lawful authorities (Lowenthal 2011, 8)

This definition fulfils the role of defining what intelligence as a phenomenon is in contrast to other phenomena, although some gray areas exist. One can use this definition to exam a case in order to be able to define it as intelligence or not. However, as a building block of an explanatory theory, it remains inadequate compared to Kent's definition. The difference between the two definitions is that Kent's considers one single type of variable and therefore can more easily be used in an explanatory theory. However, Kent´s definition has an unspoken part; intelligence is conducted in a specific context. An example of this context can be seen as that cluster

of phenomena or activities Lowenthal captures in his definition. Here it starts to become complicated. What is the phenomenon we really want to understand?

When discussing the definition of intelligence, important clarifications need to be made: intelligence conducted by whom and with what purpose? Several different forms of intelligence can be seen, some which overlap business intelligence, strategic intelligence, national/national security intelligence, law enforcement/police intelligence, military intelligence, and defense intelligence. That different types or forms of intelligence can have different definitions as seen in the classic definition stated by Kent above, where he regards strategic intelligence as "knowledge vital for national survival" (Kent 1966, VII). In addition, different forms aim to determine the subject or purpose, such as counterintelligence, economic intelligence, scientific and research intelligence, or criminal intelligence. Business intelligence and competitive intelligence comprise a large body of literature, but are, to a large extent, disconnected from intelligence studies and appear in their own journals.

Why is this clarification needed? Bimfort wrote almost 60 years ago that each expert tends to define intelligence based on his or her area of expertise (1958, 75). A statement still true today, since attempts to create a definition that encompasses national, military and police intelligence activities might not be the most fruitful approach. This is also seen in Bimfort's own definition, which only incorporates intelligence about foreign countries. A definition that aims to capture all forms of intelligence is also based on the assumption that today everything we call intelligence is the same activity or phenomenon—an assumption that is far from self-evident. This can also be seen regarding secrecy as a vital part of intelligence (Gill 2008; Shulsky 2002). Although it can be argued that it is a defining characteristic in national intelligence, it is hard to argue that it is also the case in military intelligence.

The problem with a definition that is too broad is that it is loses its power to identify and explain. The term "intelligence" encompasses several different phenomena and actions that cannot be easily captured in one definition. We can therefore talk about two types of definitions for intelligence: one that classifies the phenomena and entities, and one that aims to use it in an explanatory manner as a single type of phenomenon or entity.

This thesis and its research question focus on military intelligence. Consequently, the "classification" definition is partly given by the actors who are in the phenomena; in this case, the parts of the military organization, which the organization itself defines as the intelligence section. However, a definition of the concept of military intelligence which can act as a part of a theory with some explaining power is still needed, suited for the researcher question in this thesis.

2.1.1.1 Military Intelligence

In the beginning of the 19th century the Prussian military theorist and officer Carl von Clausewitz defined intelligence as follows:

> By intelligence we mean every sort of information about the enemy and his country—basis, in short, of our own plans and operations (Clausewitz 2008, 117).

However, the view on intelligence as the same as information or more precisely useful information has changed. This also holds for the Swedish military, the definition of intelligence has changed. Looking at the last 70 years, a transformation has occurred from collected information (general) and collected information about the enemy (more specific) to the contemporary view where intelligence is seen as a product of processed information regarding all "things foreign", e.g., nations, personas, organizations, and specific areas. However, there are countries where the "old" view still exists and forms their doctrine, for example Brazil (Article IV).

Since context is largely shaped by organizations, it is relevant to understand how the different military organizations view the term. Some common views of the concept 'military intelligence' exists in the Western armed forces but, nevertheless, there are still many different interpretations. Intelligence as a concept is both a noun and a verb, not only in the English language but also in several other languages; for example, Swedish and Spanish (Article IV). Intelligence as a verb often includes all activities involved in producing intelligence as a product, all the different phases in the process as well as the process itself. Intelligence as a noun is more complex as it can be agencies, units, and so on as well as the product, finished or not. When it is in the form of a noun, but made in reference to it as a product, it is commonly in combination with another word; for example, Central Intelligence Agency (CIA) or intelligence battalion. In short, intelligence is defined as both a knowledge product as well as an activity in military terminology so two different but related phenomena are given the same term.

Since this thesis focuses on military intelligence, the definitions used by military organizations in three countries (US, UK, and Sweden) will be used. When the definitions in these three countries' intelligence doctrines are compared, some similarities can be seen, especially between the US and Swedish definitions of intelligence (see Article IV for a discussion regarding case selection). The US definition emphasized hostile or potentially hostile forces; both the US and Swedish highlight areas of operation. The UK definition focuses on the aspect that intelligence's primary purpose is to support leaders' decision making.

US The product resulting from the collection, processing, integration, evaluation, analysis, and interpretation of available information concerning foreign nations, hostile or potentially hostile forces or elements, or areas of actual or potential operations. The activities that result in the product. The organizations engaged in such activities' intelligence.
UK The MOD definition of intelligence is the directed and coordinated acquisition and analysis of information to assess capabilities, intent and opportunities for exploitation by leaders at all levels. Information is defined as unprocessed data of every description that may be used in the production of intelligence.
Sweden Intelligence is "a product of the processing of information relating to the phenomena of other nations, individuals, organizations and regions" (translated from Swedish by the author).

Figure 2: The US, UK and Swedish definitions of intelligence according to their doctrines (The JP 2-0, Joint Intelligence, 22 October 2013; JDP 2-00: Understanding and Intelligence Support to Joint Operations, 15 May 2015; Försvarsmaktens Underrättelsereglemente 2010).

Basically four different meanings or uses of intelligence can be found: activity, product, process, or organization/agency. In the military context, the view of intelligence as a product is most commonly used, at least among the Western countries (Article IV)

The view on intelligence as a knowledge product is often connected to other concepts, such as data, information, and knowledge itself. (Article IV) This concept creates what is called the knowledge pyramid, also known as the Data, Information, Knowledge, and Wisdom (DIKW) hierarchy. For a more detailed review of DIKW, see Articles I and IV. It can, therefore, be asked: When is data no longer data, when does it become information, and when does information become knowledge or in this case intelligence? This is discussed more in-depth in Article IV. For the sake of this discussion, it is sufficient to say when the definition is connected to the DIKW hierarchy, and it is also possible to make an epistemological statement on what the components are and how intelligence as a product is created.

The view of intelligence as a product uses intelligence as decision support and provides some form of knowledge or foreknowledge. This does not exactly narrow it down, as this could also be the description of all academic work. Agrell states "When everything is intelligence - nothing is intelligence" (2002). This poses a risk when our definition of intelligence includes all types of production for decision support; intelligence as a concept has lost its meaning. Intelligence, therefore, should not be viewed as synonymous with information processing or information transformation solely. This statement also applies when the focus is on military intelligence; it is not only the intelligence section of the staff that conducts information processing or transformation.

Not one of the definitions captures all knowledge produced by the intelligence staff or excludes all other knowledge products produced by other parts of the staff. For example, the liaison section of the staff has, to some extent, overlap products re-

garding those entities that cannot be classified as hostile or domestic forces. However, two areas fall solely under the intelligence responsibilities: all entities classified as adversaries or potential adversaries (i.e., the enemy). The risk here is becoming too broad or too narrow. In this particular case, a broader definition has fewer drawbacks and can be justified that intelligence as a knowledge product involves everything except our own units, meaning our own armed forces or government.

Now we have returned to the first problem, the unclear purpose of the definition. There are two central concepts in this thesis: military intelligence institutions and intelligence assessments. The first is more of a descriptive character and the later becomes the dependent variable in any attempt to form a theory or framework.

In the case of intelligence assessments, it can then be argued that intelligence as a concept refers to the product itself. The aim of the product is to serve/act as decision support and deliver knowledge or foreknowledge. A definition that is close to this is:

> Intelligence is knowledge and foreknowledge of the world around us that al-lows civilian leaders and military commanders to consider alternative options and outcomes in making decisions (Bruce 2008, 171)

For purposes of this thesis, "military intelligence" is a product with the aim of delivering knowledge or foreknowledge of the world around us to military commanders at all levels or the activity of producing this product.

2.1.2 Models of the Intelligence Process

The intelligence cycle is the most common way to describe the intelligence process. The term "intelligence process" includes all actions taken in order to achieve the result: intelligence as a product or another outcome depending on how you define the term. There is a plethora of different "intelligence cycles" (Johnson 1986; Hulnick 2006; Evans 2009; Prunckun 2010; Clark 2013; Phythian 2013) Although several different intelligence cycles exist, most of them include at least four phases: planning, collection, processing/analysis, and dissemination.

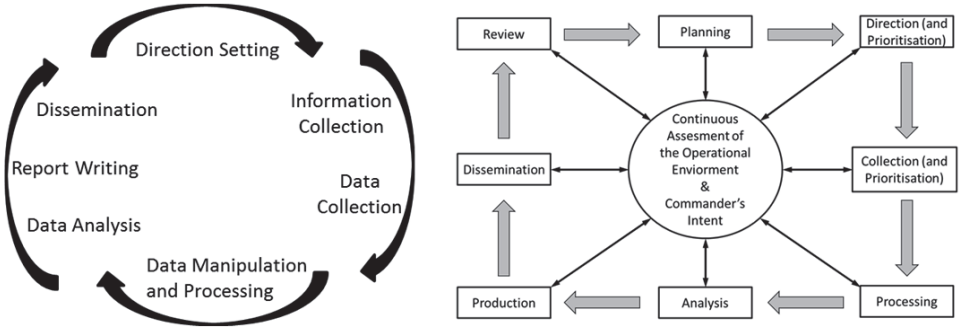


Figure 3: (Prunckun 2010, 5; Evans 2009, 41)

Two examples are illustrated in Figure 3. As the name indicates, most models include some form of cyclic pattern. However, the intelligence cycle has received severe criticism, mostly in terms of accuracy. The main part of this criticism is against the cyclical element, which is mainly considered to be too simplified as a model (Richards 2014, 46). Although the formal rules that give structure to the process might be seen as linear or cyclic processes, the reality is much more complex and nested. Different models try to compensate for this. In Evans' model in Figure 2, an extra circle in the middle is incorporated to symbolize the feedback between the phases in an attempt to overcome this problem. Critics have indicated that the model, when it is used to understand intelligence processes, is limited and that it renders impossible imaginative analysis of observation and data that do not correspond to the prevailing theories (Agrell 2009).

However, as with all models, it is a simplification and its utility is based on the purpose it should fulfil. The discussion about how intelligence cycles could be described in large as debate between those who see it as a framework of the intelligence functions and those who see it as a model which accurately describes how the intelligence process is carried out (Davies, Gustafson, and Rigden 2013). These three authors do not define framework and models, but connecting the term "model" with an accurate description. So although the criticism towards the cycle is against the usage of it as a model, its relevance as a framework is much stronger. Nevertheless, Agrell´s criticism remains, but focuses more on how the framework is used.

With the exception of Article III, the articles of this thesis describe the intelligence cycle when it is referred to as a framework aiming to describe the intelligence process. It identifies the most general set of variables as well as the meta-theoretical language facilitating communication between scholars and practitioners. For example, in Article I, the purpose of including and building on the intelligence cycle was to understand by using quantitative methods where in the process problems appeared. Therefore, a model, which clearly separates the phase, was needed. In Article III, the workflow was at the center as much of the problem was connected to the ability to act on time- sensitive information. For this purpose, Clark's target-centric approach was therefore more appropriate.

Not only the model and its cyclic patterns were perceived as inaccurate, but also the different views regarding the phases. A large number of those arguments are connected to the definition of intelligence. The standard model has the production of decision support at its core, something that should be disseminated to decision makers—intelligence as a knowledge product or an activity producing this product. However, those who emphasize the covert and clandestine parts and take action on the information or intelligence might feel more at home with David Omand's all-risk intelligence cycle (see Figure 4 below). It is basically the same argument in regards to the definition of intelligence as a concept, and Bimfort's statement is also true here that experts tend to define intelligence based on their area of expertise (Bimfort 1958, 75). It is not only that the scholars or experts define the model based on their own expertise; it probably differs depending on the area as well.

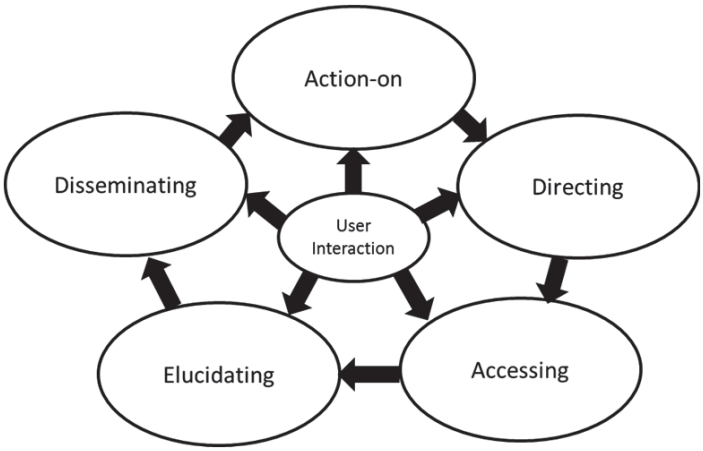


Figure 4: David Omand's national security all-risk intelligence cycle redrawn from Omand ("The Cycle of Intelligence" in Dover, Goodman and Hillebrand 2014)

The model as such and the different incorporated phases are not unique to intelligence. It can be seen as the basis of knowledge production. A question is asked, and the information needed to answer that question is collected. With the help of the information gathered, the initial question is answered. The answer is delivered to the person who asked the question in the first place. Yin's model of a case study, Figure 4, illustrates great similarities with the traditional intelligence cycle.

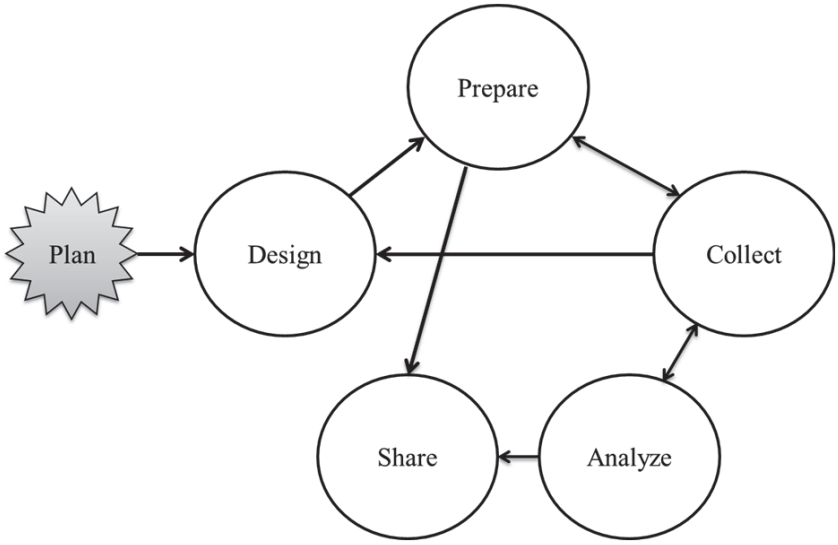


Figure 5: Redrawn from Yin 2009, page 1

Although there are similarities and the core activities are the same, the intelligence process is distinct in at least one aspect. It is a severely divided process where different individuals/sections conduct the different steps, sometimes with a low level of coordination.

This thesis regards to military intelligence and, depending on the context the intelligence process will be affected. Therefore, it is important to understand the process from the specific military context. In this context, as discussed above, intelligence can be defined simply as knowledge and foreknowledge producing an activity or product. The intelligence cycle describes how this knowledge is produced. If the military doctrines used by different nations are compared, great similarities exist. For example, there are only small differences between the US, UK and Swedish military descriptions of intelligence cycles in their respective intelligence doctrines (Article V). See Figure 5.

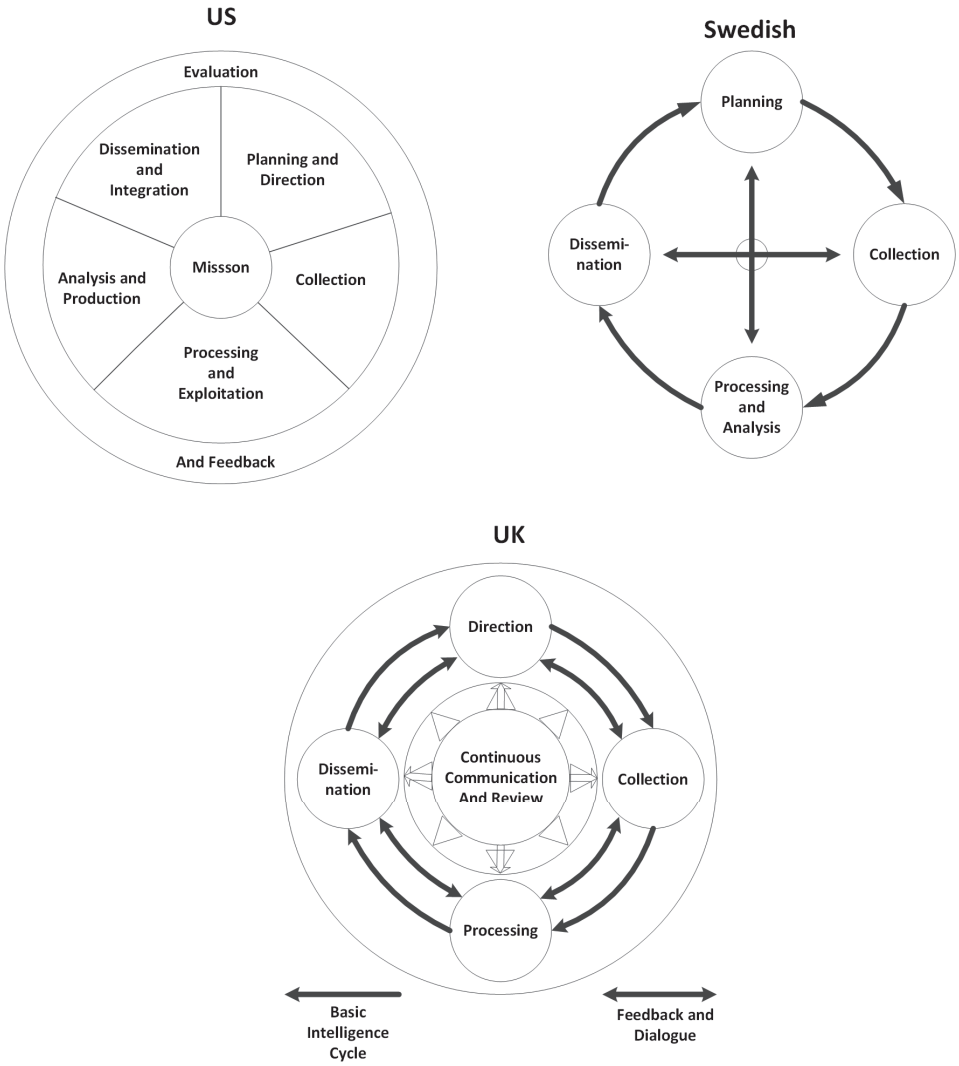


Figure 6: The US, Swedish and UK intelligence cycle. (Redrawn from the JP 2-0, Joint Intelligence, 22 October 2013; Försvarsmaktens Underrättelsereglemente, 2010; JDP 2-00: Understanding and Intelligence Support to Joint Operations, 15 May 2015).

The planning phase aims to identify what questions need to be answered as well as indicates "by whom" and "how". A central part is the collection management which

defines which collecting units and resources should be used and to a large extent prioritizes the different needs. In the military context, the collection phase is directly connected to the intelligence-requirement management process. The actor controlling the assessments, which should be conducted, is formally the commanding officer (CO) or someone from the higher echelons. They stipulate the priority intelligence requirements (PIR), which are part of the commander's critical information requirements (CCIR) (Swedish Armed Forces 2010, 29)

The PIR or the requests for information (RFI) are first broken down into what is called the specific intelligence requirement (SIR) and then into the essential elements of information (EEI). The person responsible for the process is the collection manager in the intelligence section of the staff. The EEI can be linked to indicators that are observable phenomena. According to the Swedish doctrine, the EEI typically answers questions of a closed nature (i.e., yes or no); whereas, the PIR and SIR have a more open character (Swedish Armed Forces 2010). In the collecting phase, the EEI and SIR are given to the collecting entities. In this phase, the data and information needed according to the planning phase are gathered/collected by those means seen as appropriate: signal intelligence, human intelligence, IMINT, open source intelligence, etc.

The analysis or the process phase, discussed at length below, is often divided into two steps: structuring and analysis. The collected data is structured in order to make it more easily accessible. The structured data (information) is then put into a context and used to answer the given intelligence question, which is then called analysis. The aim of intelligence is, as mentioned above, to deliver some form of decision support; hence, this needs to be disseminated to the decision makers, verbally or in writing. The dissemination becomes the final phase.

The feedback or cycle part is a core element of the model and represents the feedback loop. The different examples from the doctrine in Figure 5 are illustrated in different ways but the concepts are quite similar. The loop tells us that intelligence is a repeating process where the decision makers receive finished intelligence on questions that may result in adjustments or changes and then the process is started over again (Omand 2014, 59). This indicates that the intelligence process should be seen as a never-ending cycle.

To conclude, one of the more importance parts for this thesis is that the military intelligence process is a highly sequential process with several feedback loops conducted by several individual entities.

2.1.3 Intelligence and epistemology

As defined above, intelligence is a knowledge, product, or activity. A core question for both scholars and practitioners becomes: "What is knowledge?" and further "What is good or reliable knowledge, or rather what is a justified true belief?" If the definition of intelligence above is acceptable, it can also be said that the core of intelligence analysis is epistemology. Most research questions regarding intelligence analysis have a dimension of epistemology. Therefore, the aim of this section is not

to define the intelligence epistemology or the most central aspects, but rather to show the spectra and the lines of division.

One of the dividing lines regards the notion of uncertainty, in particular, the differences in military intelligence between Jomini and Clausewitz. Jomini sees eliminating uncertainties as a goal, whereas Clausewitz' view assesses uncertainties. Furthermore, the Jominian view claims that there is a "right" answer which is in contrast to Clausewitz, who believes that the "fog of war" will always exist (Agrell and Treverton 2015, 37). Reducing uncertainties can also be seen as the main objective of intelligence (Fingar 2011).

The "unknown unknowns" as well as the so-called black swan are also related to uncertainty. An epistemological question can be asked, "Can we receive foreknowledge about everything?" Honig (2008) labeled the two different views of intelligence, exemplified by the occurrence of strategic surprises, as the orthodox and the revisionist. The orthodox school argues that it is the nature of intelligence analysis that a "significant degree of surprise is inevitable". In contrast, the revisionist school argues that surprise attacks are avoidable since the surprise is rooted in mistakes con-ducted by the intelligence community (Honig 2008).

Uncertainties are connected to one of the core epistemological dilemmas in intelligence analysis. How little information is sufficient? Or in other words, what is the highest level of uncertainty that is acceptable while maintaining that the product still acts as intelligence?

There is a large consensus in the academic literature that intelligence analysis primarily uses an inductive approach to knowledge building in contrast to a deductive approach (Ben-Israel 1989; Bruce 2008; Clauser 2008; Woodrow 2004). A claim, which in part, is addressed in Article IV. Furthermore, there is also a division between data-driven and theory-driven intelligence.

In short, intelligence studies as a field (not even when limited to military intelligence) does not have a shared view on intelligence epistemology. Here it is important to separate the academics from the practitioners. One of the more interesting questions in intelligence studies is how the institution that creates the knowledge views the knowledge. This question dominates the focus of this thesis.

Basically, the dividing lines of intelligence analysis are the same that divide scholars of philosophy of science. It can also be concluded that epistemology is something the intelligence community needs to consider since it is an essential part of their work as well as an important field for scholars writing about intelligence analysis.

2.1.4 Intelligence analysis: Art or science

In this thesis, intelligence analysis has an important role as the overarching research problem regards intelligence analysis. What is intelligence analysis? The answer is not straightforward. This is not surprising, as the definition of intelligence is unclear (Mangio and Wilkinson 2008). Intelligence analysis is one of the steps in the intelli-

gence process that can be described as stemming from the collected data and/or information that creates knowledge and foreknowledge. Bruce and George write that "analysis is the thinking part of the intelligence process" (2008b, 1). In other words, it is part of the mental action involved in creating intelligence as a product. Returning to the definition of intelligence used in this thesis "Military intelligence is a product with the aim of delivering knowledge or foreknowledge of the world around us to military commanders at all levels or the activity of producing this product", the question still remains how and if intelligence analysis differs from any other form of analysis.

The term "analysis" means the "separation of a whole into its component parts" (Merriam-Webster 2016). However, the concept of intelligence analysis is not only the separation, but it is also the synthesis of the pieces to answer a specific question. The information is also connected to a given context. Although this describes intelligence analysis in one way, it does not separate it from other types of analysis, such as business analysis or risk analysis, just to mention but a few.

It might be a point to define some concepts close to analysis. In the British intelligence community, there is a separation between the terms validation, analysis, and assessment. Validation is an estimation of the credibility of collected data. Analysis is the processes that can "convert complex technical evidence into descriptions of real-world objects or event" (Butler 2004, 10). Assessment usually refers to an all-source level and occurs when it goes beyond the sum of all parts, an estimative judgment about the meaning as well as the implications (Butler 2004).

This separation provides some clarity regarding what the analyst is conducting. However, there is a difference between the British and American terminology. What is called "assessment" in British terminology is "analysis" in American terminology (Johnson 2008, 41) as well as in the Swedish. Despite this discrepancy, "analysis" when it is in connection with the intelligence cycle, it refers to both analysis and assessment.

Intelligence analysis is a cognitive activity that includes both using and combining different pieces of information in a specific context. In addition, it includes assessments about future events or includes attempts to fulfil existing information gaps.

What then does the intelligence part contribute to the term? Johnston has written an explicit definition of intelligence analysis. He defines it as:

> Intelligence analysis is the application of individual and collective cognitive methods to weigh data and test hypotheses within a secret socio-cultural context (Johnston 2005, 4).

The distinctive part is that it exists within a specific *socio-culture context*. The secret part can be understood by the fact that his research was on the CIA. Intelligence analysis is then done within an intelligence organization/institution. An adaptation of Johnston's definition can be made to suit military intelligence:

> Military intelligence analysis is the application of individual and collective cognitive methods to weigh data and test hypotheses within a specific military socio-cultural context

If that is what intelligence analysis is, then how is it conducted? First, intelligence analysis is not a homogeneous field of activity, not even when looking at one single institution such as the Swedish military intelligence institution in Afghanistan. The analytical approaches used when conducting an insurgent network analysis or a political analysis can be completely different regarding how the analysis is conducted. Intelligence analysis is almost as diverse as science, and the span of the methods used can then logically be equally as diverse. However, some shared patterns exist, especially when the focus of attention is on all sources or multi-source levels, which means that the analyst has access to several collecting capabilities. Marrin writes that although differences exist, the core characteristics are "research, reading, thinking, writing, and briefing" (2011, 10).

One way to describe it is that the standard method or approach when conducting intelligence analysis is more similar to journalism than to academic work. Heuer writes:

> …analysts typically form a picture first and then select the pieces to fit. Accurate estimates depend at least as much upon the mental model used in forming the picture as upon the number of pieces of the puzzle that have been collected (Heuer 1999, 62).

Thus, intelligence analysis is an activity, to a large extent a cognitive activity, with few formal rules guiding how the analysis should be conducted. It is also an activity that is derived from the same fundamental process (Clark 2013, xxiii). However, it is also an activity that is formed by the institution in which it is performed and can be seen as highly regulated in other areas such as, legalities or access to information, rules that can influence how the analysis is conducted.

How intelligence analysis is conducted is connected to the debate as to whether intelligence analysis is an art or a science. This is a topic that has been debated over the last decades (Agrell and Treverton 2015; Brooks 2005; Richards 2010). On the one hand are those who want to incorporate a scientific view in intelligence analysis. On the other hand are those who see intelligence analysis as so alienated from academic work that scientific methods cannot be used. It does not matter if the discussion is referred to as science vs. art (Johnston 2005, 20) or craft vs. science (Marrin 2012); nevertheless, there are some similarities in which way the debate is presented. It is in part how you define art, craft, and science. One part of the debate concerns the intelligence analyst as an expert. Heuer and Pherson write regarding analytical methods that expert judgment is the traditional way in which most intelligence analysis is conducted—the combination of critical thinking and subject area expertise (2010, 22).

An intelligence officer with decades of experience used an analogy of the musket and the longbow when explaining his view on the debate (personal correspondence with the author). The expert analyst is the longbow man; better precision and distance, but it takes a lifetime to learn and master. The musket takes two weeks of

hard drilling and results in a similar effect on the target. This sums up the dilemma quite well. It is hard to argue that an expert with more than 15 years of experience who has established his own way of working would do better with a more scientific method. However, this is under the premises that the analyst is a true "expert", a definition which is not easy to prove (Heuer 1999). It is also under the premise that they study the same topic or area over a longer period of time. However, there are several studies showing the limitations of using experts to predict the future (Tetlock and Gardner 2015; Tetlock 2006). One question that can be asked is: "Who has the time to become an expert today, given the fast pace in which the world is evolving?" The view of how to become an expert and what an expert is might also be questioned in the intelligence community. Richard Russell, a former political-military analyst at the CIA and a Professor at the American National Defense University, writes;

> One high-level DI official once claimed that analysts become "experts"—presumably just like he had, at least in his own mind—by writing a steady stream of short memos. Only inside the CIA would such a standard be acceptable to establish intellectual legitimacy and expertise (Russell 2007, 126).

This statement is probably not, as Russel claimed, a unique view that only appears inside the CIA. It is probably something that to a large extent the national and military intelligence communities has in common. Likewise, as an expert there is a need to learn from failures and to do this there is a need to know when failures occur and actively reflect over them. The question is if this is done or if it is even possible to do as an intelligence analyst.

To assert that intelligence is an art or a science does not help to develop the field. It is largely a pseudo debate, although the debate, as such, both raises and highlights several important questions. Yet, the central part of the discussion concerns whether or not a scientific approach is used. A novice per definition does not have the same level of knowledge as a subject matter expert. However, it is difficult to determine who is a real expert and who has just worked at the same job for a long time. Structured methods provide transparency, reliability, and consistency in an analysis. Yet, it is not proven that structured methods, in fact, improve assessments; it can be argued that it is logical but it has not been tested (Marrin 2016).

It is important to understand the difference between a few structured methods or techniques used and shared and situations in which several rules are shared. The former is aimed at capturing the scientific approach where the latter is a much larger concept. In other words, there can be a low usage of methods but still a high level of formal and informal rules and strategies forming an assessment.

2.2 Institutions as the unit of analysis

The locus problem (that is, the core unit of analysis) is important in all research but fundamental in case studies (Yin 2009, 33). One of the concluding remarks from Article I regarding the utility of statistical and other numerical methods in intelligence analysis was, "intelligence is bureaucratically produced as well as socially con-

structed and created in a distinct cultural context" (Article I). This can be compared with our definition of intelligence analysis which was:

> Military intelligence analysis is the application of individual and collective cognitive methods to weigh data and test hypotheses within a specific military socio-cultural context.

Both the remark form Article I and the definition can be restated as intelligence (analysis) is produced in a specific institution.

One concept related to institutions is 'culture,' which can be regarded as a feasible unit of analysis, but the concept 'culture' is in part incorporated in the term "institution". Intelligence culture as a concept has received increasing attention over the last decade (Bar-Joseph and McDermott, Hastedst 1996; Davies 2004; Turner 2004). Bar-Joseph and McDermott define intelligence culture as:

> An encompassing mode of thought and action derived from perceptions of national historical experience, aspirations for self-characterization, and distinctive state experiences, with respect to the role of intelligence information and analysis in shaping foreign policy (Bar-Joseph and McDermott 2010, 361).

Although cultural traits are of importance, the concept of culture is somewhat problematic. The culture is part of the institution, but when describing current cultural traits, it is rather a description of the symptoms. In other words, the concept of culture makes it difficult to separate the dependent and independent variables in this specific case.

Then what is an institution and how does it differ from a community or an organization? The concept can be defined in several ways, but the core is some form of "system of established social rules that structure human interactions" (Hodgson 2006). In this thesis Elinor Ostrom's definition is used. She defines institutions as "shared concepts used by humans in repetitive situations organized by rules, norm and strategies" (2005, 23). Institutions are then the prescriptions that the members use to organize the repetitive and structured human interaction, families, government, firms and religions (Ostrom 2005, 3). Institutions are then something more than the organization, the company or its members; it is fundamentally a shared concept. This concept exists in the minds of the participants but does not always need to be in the form of explicit knowledge (Ostrom 2005).

It can be conclude that institutions are human constructions and a group of individuals that shares the same rules, norms, and strategies defines the boundaries. The exclusion criteria are logical humans that do not share these rules and norms. The institution, although it can be seen as a product of the community, is a separate entity. Institutions, in contrast to a community, are not defined by its members, but the boundaries are connected to its members as they are the carriers of the institution.

This means that institutions exist everywhere humans are forced to interact over time, e.g., the family, at work, in the mosque, or in the chess club. In other words

different institutions influence the main part of our daily lives. Berger and Luckmann (1967) take it so far as to claim that institutions, as a consequence of their existence, influence and control the actors' actions. This is done by predefined patterns that channel actors into one direction of many, that is on a theoretical level possible (Berger and Luckmann 1967, 72). Even if someone does not agree with the Berger and Luckmann view that it controls the actors' actions, it can be conclude that it has a vital impact on defying the available actions.

The institution is only one part that influences human actions. The level of impact an institution has on an analyst's assessment is unfortunately difficult to measure. However, it can be argued that the impact the military institution has on its members is larger than many other institutions. Erving Goffman's (1961) concept regarding the "total institution" as a specific form of institution points in that direction. Goffman's total institution has three characteristics that are all relevant to a military setting: constant supervision of its members, a standardized system (e.g. providing bedclothes and food), and formal rules that direct the daily lives of its members (1961). Although the applicability of Goffman's total institutions may be questionable in the case of, for example, the deployment to Afghanistan, these three key characteristics are still similar on a lower level. These characteristics have an impact on the effect or influence the institutions have on the actors within it. Goffman's definition of institution differs, in part, from Ostrom's, but in this case the boundaries of the institution and the actors that are included would be similar.

2.2.1 The Institutional Analysis and Development Framework (IAD) framework

Although there is a crude definition of the phenomena, the independent variable in this case, some form of simplification is needed if any understanding of the situation is going to be drawn. The philosophy of science has shown with Karl Popper in the lead, that we are to a large extent influenced by our presuppositions; the world is viewed and understood through a lens. The core of the research question in this thesis takes this for granted, and to assume that I as a scholar should and could stand above this would be hypocritical. Therefore, there is a need to lean upon a theory or framework.

Intelligence study as an academic field is combined with a plethora of different disciplines, which has resulted in the lack of a common language (Warner 2009, 11). The Institutional Analysis and Development Framework (IAD) framework has a multidisciplinary ambition and combines political theory, economics, sociology and psychology. One of the reasons that the IAD framework has been developed is to create a common set of linguistic elements (Ostrom 2005). Therefore, the IAD framework was deemed suitable for addressing the issues of intelligence context on an institutional. The IAD belongs to the family of frameworks that are called institutional rational choice. This area is one of the more developed in understanding a given policy process (Sabatier 2007b, 9). It is part of policy theory and regarded as a subcategory of new institutional analysis.

The IAD is not the only framework that could have been used in this thesis. For example, the Advocacy Coalition Framework (Sabatier and Weible 2007) might have

been an appropriate lens to apply; however, it would have changed the main focus to the belief systems. The primary reasons why the IAD framework is seen as the most promising is its multidisciplinary language. Furthermore, one of the strengths of the IAD framework in this setting is that it focuses on rules as well as norms, and thus was easily adapted to the empirical findings of the research object (i.e., the intelligence institution). In other words, the IAD framework provides a certain degree of flexibility which in this case is a great advantage.

The IAD framework has several components. The central exogenous variables can be divided into three main clusters: rules-in-use, attribution of the community, and the biophysical/material conditions (Ostrom 2005). Rules-in-use are the set of variables that when combined build the structure of the action situation. The concept "rules" as many concepts in social science has had diverse connotations. However, there is a distinction between strategies, norms and rules, which are all included in the umbrella concept of rules-in-use. The term "rules" here refers to when a rule is expressed in a regulative sense. The concept "strategy" will be used instead of "rule" when it takes the form of instructions and refers to the individual plans of action (Ostrom 2005, 17) "Norms" refer to those rules that are connected to prudent or moral behavior.

Attributes of the community is the entity that captures the community's effect on the structure of the action situation (Ostrom 2005, 26). It includes all social and cultural aspects of the community that influence the action situation. In the case of intelligence analysis, shared belief structures become central. Ostrom mentions some attributes that are seen as important; those are, among others, shared common understanding and values regarding what is seen as acceptable behavior within the community. It is possible to talk about a common understanding and a common culture repertoire.

Material conditions capture the actions that are physically possible and also the outcomes that can be produced (Ostrom 2005, 22). In this thesis, the material conditions are secondary, in most aspects, to the rules-in-use and the attributes of the community. However, the material/biophysical condition provides the frame on which the rules are built. There are situations where intelligence officers, such as in a mobile forward command post, are highly dependent on those physical systems that enable communication and information management and may also influence how incoming information is interpreted. Analysts are also highly dependent on technical systems for analysis as well as dissemination. This is becoming increasingly more so. To understand why certain rules are established, one needs to understand the biophysical conditions. An example of this is presented in Article III where the technical solutions must work with the current organization and doctrine in order to be useful.

The holon action situation is the central component within the IAD framework. Ostrom defines an action situation as when at least two people jointly produce an outcome from a set of potential actions (Ostrom 2005, 32). Seven clusters of variables are used to describe these situations:

(1) the set of participants,
(2) the positions to be filled by the participants,
(3) the potential outcomes,
(4) the set of allowable actions and the function that map sanctions into realized outcomes,
(5) the control that an individual has in regard to this function,
(6) the information available to participants about actions and outcomes and their linkages, and
(7) the costs and benefits – which serve as incentives and deterrents – assigned to actions and outcomes (Ostrom 2005:32).

Three variables are especially relevant for the main research question of this thesis: the positions, the set of allowed actions, and the information available. These three variables were central components in the analysis in Articles IV and V as well as the supporting case study in Chapter 4.

2.2.2 Holons and systems

What is a holon? It is something that is both a whole and a part. Arthur Koestler, the founder of the concept, writes that they are entities of self-regulating open hierarchic orders. It is a nodal point in a hierarchy describing the relationship between entities that are self-complete wholes and entities that are seen to be dependent on other parts (Koestler 1970). This means that as the focus changes and moves up, down, or across the nodes, so do the notions of what is regarded as the whole and what is regarded as a part. What is seen as a whole depends in other words on what is studied. Within the institution of interest, what is then connected to the locus problem or the "system in focus" in system engineering? There are similarities between the concepts of systems and holons, where holons can be seen as a specific form of a system (i.e., a holon is a system but all systems are not holons).

For the purpose of this thesis, the concept system might have been a sufficient abstraction level for the main research question. However, this thesis uses the concept of holons instead of systems in being true to Ostrom's terms. One of the reasons for the development of Ostrom's framework was to provide a common language (2005), and renaming concepts would simply undermine this.

The view of holons has a central role in the IAD framework but does not play a vital role in the articles included in this thesis. However, when understanding them as part of a larger system, the concept may act as a tool for understanding. Holons have, therefore, a more central role in this introductory chapter.

2.3 Model of the individual

One of the main debates in social science over the last decade has been between methodological individualism and methodological holism. Methodological individualism works under the assumption that the only actors in a social setting are the individuals. Methodological holism, on the other hand, claims that social phenomena

as such should be understood by the wholes—the setting in which the individuals operate. The institutional view is that although individuals are central, the choices the individuals make depend on the nature of the institutions in which they belong to (Peters 2011, 14–15). Neo-institutionalism (new institutionalism), to which this thesis belongs, conforms to methodological individualism. However, methodological individualism is a complex term with many contradicting views under the same umbrella. There are two differing perspectives: one that explains social phenomena in terms of individuals and the other that explains social phenomena through individuals and the relations between individuals (Hodgson 2007, 218). Hodgson proposes to abandon the term completely (Hodgson 2007, 226). For the purpose of this thesis and the overarching research question, individuals are considered the main actors in all social phenomena but it is acknowledged that their actions are influenced and restricted by their social setting (i.e., institutions).

Rational choice theory has played an important role in the field of institutional analysis. Within the holon of the action situation, assumptions are needed regarding what can be seen as the three essential components: information, preference and choice mechanisms. Rational choice theory is based on the assumption that individuals know what is in their self-interest and act accordingly. This assumption has been questioned from different perspectives, especially regarding decision making under uncertainty. As intelligence analysis can be defined by the fact that it is conducted under uncertainty and ambiguities (Lowenthal 2011, 190), intelligence is conducted in a world of deception and denial (Clark 2013). Yet, assumption cannot be consider valid here.

Herbert Simon formed the theory of bounded rationality (1957). This theory stands in contrast to the view that individuals try to maximize their benefit from a particular course of action. The theory is based on the argument that that we as humans cannot assimilate or digest all necessary information. To cope with this, the human mind restricts itself; the human mind is bound by cognitive limits.

Bounded rationality was developed as a reaction to traditional rational choice theory. It is the assumption that human decision making is limited by the available information as well as cognitive limitations. Humans act rationally based on the available information they have, and this shapes their perspective of the problem at hand. Individuals are rational based on their perceived reality. Bounded rationality can, therefore, be seen as more suitable in this context.

The concept of reality in this thesis is used in its simplest form – and more the man on the street than a philosopher's view. This is in part to avoid the sematic discussion on the subject. Reality is used in a similar way as Berger and Luckmann (1967) use of it in *The Social Construction of Reality*: "define reality as a quality appertaining to phenomena that we recognize as having and being independent of our own volition (we cannot 'wish them away')" (Berger and Luckmann 1967, 13). Although there is an objective reality, this reality is difficult to comprehend

It can then be understood from a social constructivist and psychological cognitive perspective – what can be interpreted as 'reality' is in fact a mental creation of individuals. Likewise, an analyst constructs reality based on his/her mental models and

mindsets. If something is outside of this mental model, the analyst has a problem in both comprehending the information and interpreting it as a vital signal; that is, it becomes background noise. Understanding the search for new information and processing it into knowledge, as well as the subsequent impact of this knowledge, is then vital to understanding the intelligence process and thereby this action situation. First an understanding of the character of mental models and how they operate is needed.

The IAD framework is part of the rational choice institutionalism; this, however, does not mean that there is a need to accept the premises of the rational human if the framework is utilized. Although IAD emphasizes rules, the norms can still be a vital part. The framework is used in this thesis in a way that is closer to normative institutionalism than rational choice intuitionalism—two approaches that are often seen in direct contrast to each other (Peters 2011, 14–15). However, as Ostrom's framework is generic in its structure and following the assumptions that norms can also take the form of rules-in-use, these views do not need to be contradictory; they could even be complementary.

Bounded rationality as such is directly connected to the terms "cognitive bias" and "primary heuristics". One way to understand cognitive bias is to see it as a by-product of limitations in human processing. Kahneman and Tversky laid the foundation for much of the research in this field (for example, Tversky and Kahneman 1981; Tversky and Kahneman 1974; Tversky and Kahneman 1986). Within the field of intelligence studies, Richard Heuer's book, *Psychology of Intelligence Analysis,* discusses the issue at length and its impact on the specific context of intelligence analysis (1999). Cognitive bias is very hard to overcome; even if analysts are aware of the bias, they often cannot compensate for it (Heuer 1999, 112).

The human mind has cognitive limitations, which go over and beyond heuristics and bias, touching our belief systems. These belief systems can be shared among individuals and, thereby, they can influence social groups (Smith and Passer 2007, 14). Our world view is, therefore, in part socially constructed. How people perceive their surrounding environment depends on their culture and social belonging. The attributes of the exogenous variable in the IAD framework capture the community's social and cultural aspects. How can then the variable in this context be understood?

This is an area that has received a lot of focus within the intelligence literature as it has often been connected to intelligence failures. Treverton wrote that the reason for the outcome of the Iraq assessment and weapons of mass destruction (WMD) was a shared mindset between the intelligence community and policy makers (Treverton 2008, 93–94). Jervis states that the cause of many intelligence failures can be traced back to an inability and failure to rethink beliefs and perceptions related to incoming information (2011, 169–70). Eriksson has shown how the shared mindsets of Sweden's Military Intelligence and Security Service created an environment in which strategic analysis resulted in an interpretive framework that was not questioned (2013). Regarding the Yom-Kippur war, the Agranat Commission wrote about something they called "the concept", a fixed notion that was shared within the Israeli military (Ben-Israel 1989). This notion was the unchallenged assumption that Egypt would never attack as long as they lacked a long-range air-strike capabil-

ity to attack the Israeli airfields. "The concept" also included the assumption that Syria would not attack Israel alone (Ben-Israel 1989, 660). This shared concept prevented the Israeli intelligence service from predicting the attack.

Denzau and North developed a framework that modelled how shared mental constructions influence as well as guide our decisions within an institution (2000). Ostrom adapted this model, asserting that it is significantly affected by external feedback as well as the culture and belief systems to which the individuals belong; see figure 7 (2005, 105). The model aims to describe action situations between actors and is not completely applicable to explaining an institution's influence of assessments. However, it gives a basic understanding and platform for a point of departure.

The model has several important components but the central one in this context is the dual influence between the mental model and the perception of the situation. The mental model, as such, is influenced by the culture of the institution. However culture is, as mention above, a concept that can include a lot of different variables. One large part of culture which is of primary interest here is cultural beliefs which are in this case directly connected to the concept of strategic cultural.

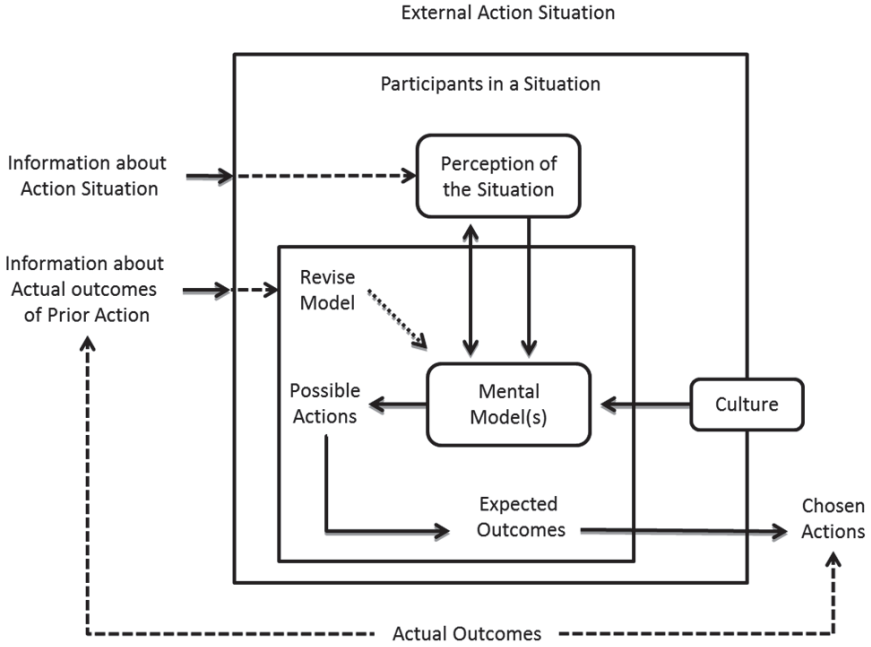


Figure 7: The relationship between information, action-outcome linkages and the internal mental models. (Redrawn from Ostrom 2005,105: interpretation of Daenzau and North 2000 page 36.)

Beliefs and assumptions influence our understanding of the world; beliefs that are interrelated and describe our reality can be said to be part of our worldview. The concept of worldview is central in several disciplines and appears under a variety of different names (Koltko-Rivera 2004). Koltko-Rivera defines worldview as a set of beliefs and assumptions about what is and is not real, defining both what is possible to know about the world and how knowledge can be created. Worldviews are heu-

ristic assumptions that are connected to the epistemic and ontological foundations of other beliefs (Koltko-Rivera 2004). Kuhn's concept paradigm is directly related to the above-mentioned worldview. A paradigm is "the set of views that the members of a scientific community share" (Kuhn 1970). From this perspective, intelligence is working in the borderland between science and common sense, an aspect it shares with the field of public administration. Thus, it is appropriate to talk of both an intelligence paradigm and a shared worldview, where the latter encompasses larger concepts and includes common sense as well as scientific views. This view is very similar to the Advocacy Coalitions Framework's concept of "deep core beliefs", which are beliefs related to general normative and ontological assumptions about human nature (Sabatier 2007a, 176).

In order to facilitate a meaningful discussion, a summary of the various concepts and their internal relations is presented. The world is interpreted by our beliefs and assumptions; beliefs that are connected can be seen as a belief system or belief set. Beliefs and assumptions about the underlying nature of reality can be said to be part of our worldview. However, not all beliefs belong to a worldview (Koltko-Rivera 2004, 5). Only beliefs that pertain to the core assumptions of the nature of the social or physical reality can be seen as part of an individual's worldview.

2.4 Discussion of the theoretical foundation

There are four main interacting entities or holons of the military intelligence process, which correlate to the intelligence cycle: planning, collecting, analysis, and dissemination. Planning can in part be seen as a holon, but is more complex in its nature as it is an integrated part in all central holons as well as the decision-making process, which the intelligence process supports. It is, therefore, hard to see planning as an entity in its own right. All four holons are deeply nested within each other. The processing and dissemination holons are so deeply nested that in most cases it is more correct to talk about them as one. The hierarchic structure of the holons is evident and is significantly connected to the military culture.

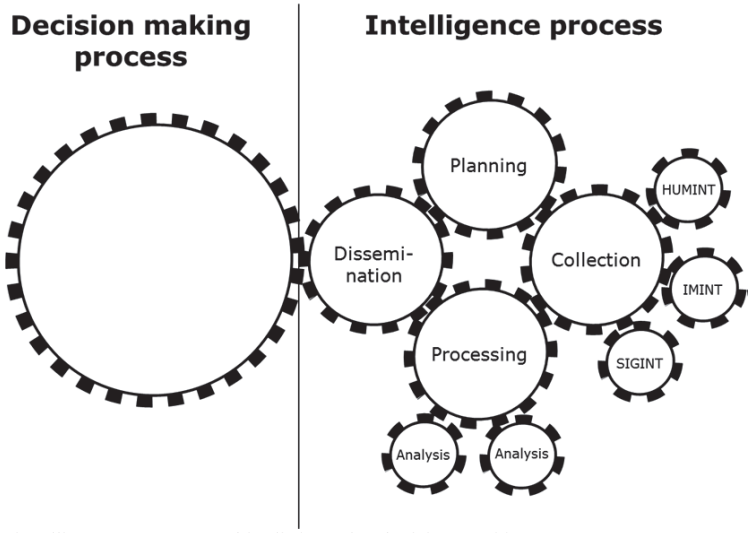


Figure 8: The intelligence process and its link to the decision-making process

In the case study (namely, the Swedish military intelligence institution in Afghanistan) presented in Articles I, V and later here in the chapter 4 it is possible to talk about separate collection holons that have had other holons attached to them. The head of the collection holon was the Intelligence, Surveillance, and Reconnaissance (ISR) company after it was established in 2010. The collection holon had its own version of the intelligence process with the same steps (i.e., planning, collecting, analysis, and dissemination). The different collecting entities such as the HUMINT team(s) maintained their intelligence process with the same four steps. Even if the foundation is the same, the different holons do not need to have the same priorities and can emphasize the steps differently. The intelligence process can, therefore, be seen as several individual processes that are all rotating at different speeds and have some form of autonomy. They are also hierarchical in their nature.

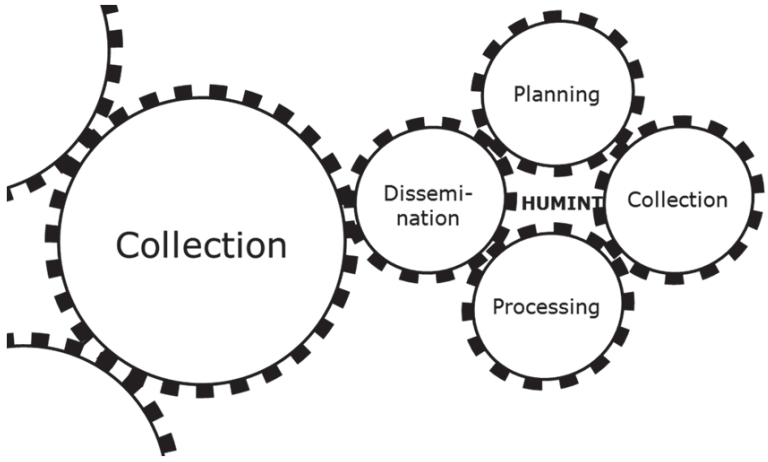


Figure 9: The HUMINT intelligence process and its link to the collection.

The different parts are linked within the intelligence process, and depending on the level in the hierarchy that is of interest, they shift in relevance. This view gives us the possibility to analyze different sections or layers of the intelligence process; one brick at a time in slowly building the whole house.

If the different parts are seen as holons, this also means that it is possible to analytically dissect them separately and thereafter build our understanding of them as a whole. What this means is that one part of the intelligence process can be analyzed at a time and later be used to construct the whole process of the different parts. In other words, there is no need to try to understand and analyze everything at once, which would be a difficult task. This thesis is primarily about processing holons and examining institutional influence on intelligence assessments. Thus, with the action situation in focus, an assessment is produced by the intelligence analyst.

2.4.1 Intelligence analysis as an action situation

In this thesis, the action situation is primarily considered intelligence analysis with the outcome in the form of an oral or written intelligence assessment, for example, a specific threat assessment reported in the daily intelligence summary (INTSUM). A model of the action situation in question can be created with the aim of describing military intelligence institutions' influence on assessments. The model below is inspired by Ostrom's version of Denzau and North's model of regarding learning and shared mental models within institutions (see figure 7). The adapted model shows how the influences from the exogenous variables affect an analyst's mental models and thus the construction of shared mental models for this type of action situation. The mental model of the situation is placed within the boundaries of the produced assessment.

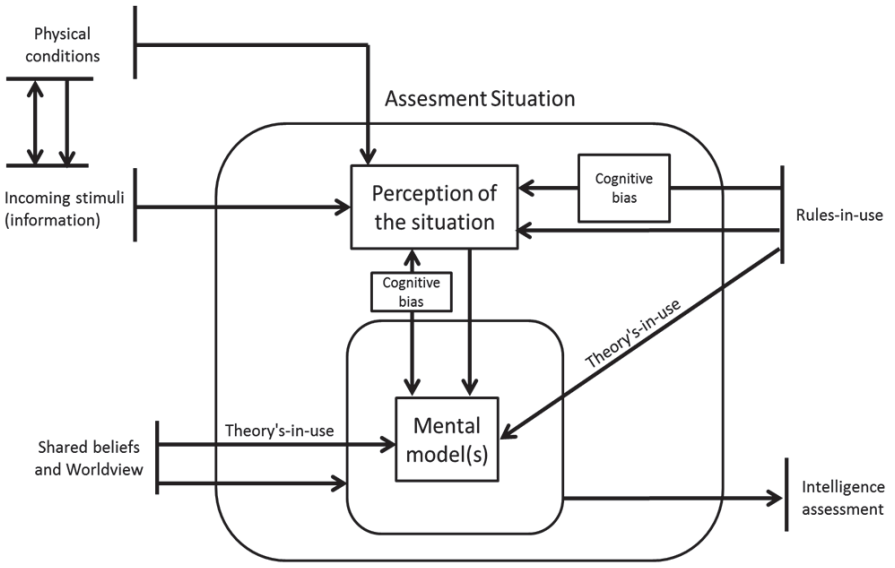


Figure 10: Action situation for an analytical process.

The institution is influenced through three main variables: shared beliefs, rules-in-use, and incoming stimuli. They all affect the mental model but in different ways. The influence of shared beliefs within the institution either limits or restricts the mental models. It creates the boundaries in which the mental models can be formed. The innermost box in Figure 9 represents the institution's boundaries and possible models. Beliefs that the institution's members can express and articulate can be seen as theories-in-use and can have a direct influence on the mental model. The rules-in-use have a more complex impact in which incoming stimuli have a direct impact on perception, and the rules-in-use have both direct and indirect influences on the mental model and perception. Perception is viewed as the processing and organizing of the current stimuli. In a larger sense, it is the direct interpretation of this stimuli.

The direct influence of rules-in-use can be explained by looking at how scientific knowledge is created. In this context, theories can be understood as a form of a formal (explicit) mental model. Here, this is defined as a specific strategy called theories-in-use and it has the same kind of influence as those theories-in-use from shared beliefs. The indirect influence of rules-in-use occurs if the rules affect the perception of the situation by creating or enabling the occurrence of cognitive bias or heuristics in the interpretation of the incoming stimuli. The rule can also act to avoid or mitigate the cognitive bias. In the next section, these two forms—indirect and direct—are explained and developed further.

In this situation, the physical context may influence the perception of the action situation as a consequence of how incoming data (e.g., software such as IBM i2) is visualized ('IBM - i2 Analyze' 2016). The physical context may also influence which data/stimuli can be collected or obtained as a consequence of either technical collecting capabilities or the laws of nature.

Sometimes the rules-in-use in directly influence the mental models. The perception of the stimuli/rules triggers cognitive bias and limits the available information at any given time. An example of this can be found in the legal system in the United States. Juries tasked with assessing punitive damage are explicitly not allowed to compare the current case with other similar historical cases. Consequently, a formal rule is created regarding how the mental framework should be constructed, restricting the jury members and influencing their assessments. When cases are assessed in isolation, emotional values are more likely to guide decisions (Kahneman 2011, 362). So here is an institution with a rule-in-use that leads to behavior resulting in a systematic perception bias among its members.

Institutions' influences on analyses are not exclusively negative; they can be neutral as well as have a positive impact on assessments. Davis discusses institutional initiatives at the Central Intelligence Agency that promote the use of alternative analyses. Devil's Advocacy and the Analysis of Competing Hypotheses are examples of such alternatives (Davis 2008, 167). A strategy is created that is meant to broaden the analyst's perspective. Both of these examples can be connected to framing; that is, how a question is presented and in what context will influence the conceivable answers and solutions.

Several cognitive biases have been connected to intelligence analysis work including anchoring, availability heuristics, confirmation bias, and framing (Heuer 1999; McNeese, Buchanan, and Cooke 2015). However, there is a variety of different forms of cognitive biases, but those cognitive biases resulting from the rules-in-use can be largely understood as institutional influence. Yet, some of the types of biases and heuristics mentioned in the literature overlap and are attributed to several factors. The problem is that it is not possible to isolate or measure any effect of a bias within the institution. In other words, the existence of a rule that enables a specific cognitive bias is not clear evidence of any influence on the analyst's assessment.

Rules or strategies can directly influence our mental models by simply stating what needs to be considered, what the influencing variables are, and the relationship between them. Rules in that form are best understood as theories-in-use. When scholars use a framework or theory, they can understand this as a formal mental model or perspective. Sabatier wrote that academic analysts "look at the world through a lens consisting of a set of simplifying presuppositions"(Sabatier 2007a, 5). The frameworks provide a way to communicate with others; that is, they provide a common language and assumptions. A pertinent question to ask, then, is whether theories are used in intelligence analyses. Ben-Israel suggested that intelligence estimation uses a conceptual framework in the same way science uses a theory (1989, 661).

One example is the *US Army Intelligence Analysis Training Manual.* It defines a methodology in which "applying theory" is also called the "social science approach." The term "theory" was considered uncommon in the intelligence community (US Army 2009, 2–19). Although the US army doctrines cannot be seen as representative for all intelligence, there is still value in analyzing it. This lack of theory can be connected to the view of the problematic use of scientific theories in intelligence analysis. Davies clearly expresses these fears:

> Speaking as one educated in the social sciences and their theoretical traditions, it is hard to imagine anything more blood-chillingly alarming. The idea that individuals advising the chief executives of nuclear-armed states might become bogged down or divided in their assessments over the relative merits of Marxism, functionalism, Lacanian psychoanalysis, or whose viewpoint was false or emancipatory consciousness (Davies 2008, 200).

Although Davies probably did not mean to imply that an analyst starts with a completely blank page, his example is thought-provoking and it forces us to ask where and at what level theories are needed. The question here is rather epistemological and pertains to how knowledge is created. Intelligence analysis is often referred to as a primarily inductive activity (Clauser 2008, 53; Ben-Israel 1989, 662; Bruce 2008, 175; Woodrow 2004, 86). Although this is likely to be true on one level, the analyst does not often begin an analysis with clearly defined theories, as is the case in the social sciences. Nor does this mean that they start with an entirely blank page. Heuer argues that what "academics refer to as a theory is a more explicit version of what analysts think of as their basic understanding of how individuals and institutes normally behave" (Heuer 1999, 35). Thus, the theories used within the institutions are central. In this thesis, theories-in-use are defined as rules or strategies that regulate or guide the analysis process; that is, which variables of an assessment should be

included, and which relations, if any, exist between the given variables. Theories-in-use can be in the form of concepts, frameworks, or theories. Beliefs can take the form of theories-in-use when the institution's members can articulate the theory. Both rules-in-use and beliefs can take the form of theories-in-use. The difference between theories and beliefs is that when a belief takes the form of a theory-in-use, it affects the mental model directly rather than merely providing the model with boundaries.

2.5 Theoretical conclusions

The theoretical foundation of this thesis can be summarized in the following three points:

- Military intelligence is a product with the aim of delivering knowledge or foreknowledge of the world around us to military commanders at all levels or the activity of creating this product.
- Institutions influence and affect most parts of intelligence production.
- The individual is the central actor in intelligence analysis, but this needs to be understood in combination with an individual's social relations with other individuals. This can be done by truly understanding the institutional setting in which an individual belongs.

The model presented in the discussion of the theoretical foundation can be used as a theoretical lens to understand and identify the relevant factors of institutional influence in action situations. The framework for the assessment and analysis is strengthened when used as a complement to the IAD framework.

3

METHODOLOGY AND METHOD

This chapter will discuss the research design for this thesis as well as methodology, the case selection and the prospects for generalization. The data collection techniques utilized in this thesis will be discussed and their pros and cons will be critically examined. This is followed by a section on research ethics, in particular those applying to intelligence organizations. The fact that the current researcher has worked and been part of the investigated institutions is also addressed.

3.1 Research design

This section presents the general research strategy outlining the way in which this research was carried out (i.e., the methodological approaches) as well as the different methods.

The articles drew upon both inductive and deductive approaches: Articles I and II used primarily an inductive approach, and Article V utilized a deductive approach. The supporting case study also applied a deductive approach although it is primarily conceptual in its design and results. Furthermore, the supporting case study and Article IV both used a mixed method approach. The methodology of this thesis can therefore be described as a mix-method approach, regarding both the methods used and the methodological approaches. The usage of a multi-method or mixed-method approach is the consequence of the research question and the theory not the other way around. Therefore, it is of great importance in maintaining the linkage between theory and method throughout the research (Hesse-Biber and Johnson 2015, xvi). Significant attempts were made to avoid a method-centric approach where methods are chosen since they are most familiar.

The difference between mixed and multi-methods is that mixed methods refer to the use of both quantitative and qualitative methods. However, as the terms quantitative and qualitative are both problematic and the distinction between them is sometimes irrelevant, it makes the term "mixed-methods" problematic. Therefore, the central distinction is not between multi or mixed but rather regarding the methodology. Are the methods used sequential (i.e., each method helps to answer one part of the research question), or are they combined (i.e., the result from two or more methods being compared with each other)? The two methods used in this thesis were case studies and experiments. Three different collecting methods were used: interviews, questionnaires, and document studies. When combining these, the thesis can be seen to have a multi-method approach. However, the supporting case study is the only single text in this thesis that used a clear multi-method approach; that is, both statistical analysis and text analysis were used on analyzing the collected information. In all texts, a sequential approach was used. In Article V, as a complement to the experiment, an analysis of the written replies was conducted in an effort to

strengthen the statistical analysis and, therefore, a combined approach was used.

The aim of the research can be descriptive or explanatory, but in most cases it is a combination. Sometimes descriptive research and explanatory research are said to be completely different approaches. However, they are best understood as two sides of the same coin which complement each other. There are direct similarities with a multi-method approach and with the descriptive and explanatory approaches, and they take turns leading. It is in this context that the articles in this thesis should be understood. Explanatory case studies are more or less forced to have considerable descriptive elements.

The most frequently used method in this thesis is the case study. As with most concepts, there is no firm consensus regarding what a case study is (Kaarbo and Beasley 1999, 372). George and Bennett defined a case as "...an instance of a class of events" (2005, 17). Here in this thesis, the "class of event" is the military intelligence institution. A case study can then be defined as a "well-defined aspect of a historical episode that the investigator selects for analysis, rather than a historical event itself"(George and Bennett 2005, 18).

If the different texts are categorized after design, Article I can be seen as an explorative case study with the aim of answering 'What effect does the utility of quantitative methods have in military intelligence analysis?' Article II can be described as a mix between a single case study and concept paper. The aim of Article II was to identify important challenges when applying risk-based approaches to military activity. The supporting case study was a theory-developing case study and, in the form, is an instrumental case study (Stake 1995). Article IV is a comparative case study with the overarching research question determining the assumptions upon which the definitions of intelligence within military intelligence institutions are based. Article V involves theory testing through experiments in an effort to test the counterfactual influence institutions have on assessments. Article III is a concept paper that addresses some of the new prerequisites for the counterintelligence community in the cyber domain.

The supporting case study could also be defined as a mixed method where a case study and a survey were combined. However, it is more accurate to describe it as a case study where one of the collecting techniques used was the questionnaire. The difference is in part semantics but primarily connected to the research design. In this case, the main research question was broken down into subquestions and in some cases, where it was appropriate, to indicators. Thereafter, each source was selected so that it could answer the specific question or to verify the existence of a specific indicator or lack of it. In other words, the questionnaire was part of the case study design and not a separated method, and, therefore, it should not be classified as a survey.

Why is this important? The difference is at the core of how the techniques and methods were applied in the research. The choice is connected to the theory and the research questions, and the combination of methods and techniques draws upon the different strengths rather than trying to compensate for different methodological weaknesses. In other words, a triangulation method was not conducted. We could

talk about method triangulation in connection to what techniques are used in gathering data. However, one can question if that is not more or less the standard way of usage in most modern case studies

The multi-method approach in the supporting case study and in this thesis in general does not strengthen the reliability of the research and is only aimed in part to strengthen the validity. The aim of the multi-method approach is best described as an attempt to provide a more comprehensive answer to the research question. This is best explained in connection to causality and is directly connected to the research question 'How do military intelligence institutions influence analysis?' The dependent variable can then be operationalized to the assessment, the independent are the institution, which is the combination of the rules-in-use, the shared belief system and the incoming stimulus to the analyst.

The view of causality and how it is measured are central elements in most academic endeavors aiming to explain research. In this case, the aim is to explain institutional influence. Four criteria need to be fulfilled in order to establish causality: counterfactuals, time order, isolation, and mechanism. All these criteria are deemed equally important to causal explanations. The concept of time order is addressed primarily in the supporting case study but appears also in Article I. One of the strengths with case studies is in establishing the time order.

The criterion of isolation is answered, only to a small part, by the experiment in Article V. This is the weakest part of the link as the institution influences a person's mental model which is in and of itself, a person's own experiences. Isolation is the most problematic criterion to fulfil in the social sciences. The strength with the experiment method is the possibility to isolate the variables. However, in the social sciences we are usually directed to natural experiments where we cannot control the variables or acquire an adequate sample that is not too small. Often only one part of the variable in the research question can be tested using the traditional experiment method. The weakness of the isolation criterion is that it primarily influences the validity of the research negatively.

In Article V, only one single rule-in-use was tested in what can be best defined as an artificial intelligence institution under similar conditions as the one studied here. The results show a link between the independent institution in the form of a specific rule-in-use, and the dependent variable in this case is a fictive threat assessment. Although the isolation criterion is weak and there are several factors influencing its strength, it is a vital contribution to the framework and therefore has been included in the theoretical foundation of this thesis and the supporting case study. Without the experiment method, the framework is only based on a logical argument and not empirical evidence.

Mechanisms focus on the chain of actions or parts, which are the links between the independent variable (in this case the institution) and the dependent variable (the assessment). Causal mechanisms are a plausible and logical path between the independent and dependent variables and, to a large extent, capture what is in the activity and in the concept 'intelligence analysis.' The mechanism is described by the supporting case study in chapter 4.

Counterfactuals of the dependent variable (the intelligence assessment) and the independent variable (the institution) are presented and discussed in the experiment in Article V. However, only the counterfactuals for one single rule-in-use are provided, and but the interaction of this rule with other rules or beliefs from that same institution is not included. One of the main weaknesses with case studies, in general, is the problem of estimating the causal weight or effect of variables. A counterfactual can be formulated, but the causal effect is still unknown. Causal effect is, simply, the strength of a specific causal relationship (the degree in which the value of the dependent variable changes as a consequence of the independent variable). The causal effect of the institution on assessments is difficult to assert based on the conducted research. The experiment on threat assessments suggests a causal effect on one specific rule disconnected from other rules-in-use and on the specific belief system connected to the situation in Afghanistan. This means that drawing any conclusions based on the institution's causal effect in general cannot be made. It might be possible to assess the strength in some specific tasks and by cross-case studies. It might be possible to distil some areas in which the intelligence institutions have a larger causal effect on assessments than others, for example, in routine assessments versus non-routine assessments.

3.2 Case selection and generalization

Validity is often divided into external and internal parts. One of the strengths of case studies in general is the conceptual validity, which is a part of the internal validity. The risk of "conceptual stretching", which is common in statistical studies (i.e., combining cases which do not belong to the same class to increase the sample size), does not exist in case studies (George and Bennett 2005, 19). It is a trade-off between internal validity and generalization. Conceptual validity is hard to determine in this study as the main case is a Swedish military institution in Afghanistan and the aim is to study military intelligence institutions.

External validity is directly connected to generalization and the unstudied population. Generalization for case studies has been questioned under the premise that it is not possible to draw generalizations from one data point. The critique is connected to the fact that it is not fruitful to extrapolate probabilities (statistical generalizations) from a case study. But what kind of generalizations may be made? There is not a total consensus among case study methodologists on this question. Stake writes that the purpose is to modify existing generalizations (Stake 1995, 7). Yin has a similar view that case studies can produce generalizations of the sample and that can be used for formulating theoretical propositions (Yin 2009, 21). According to Yin, the goal of a case study is, therefore, to expand and generalize theories in order to formulate analytical generalizations (2009, 21).

George and Bennett broadened the term "generalization" and demonstrated that a case study can be generalized to "neighboring cases" and under some circumstances even to all cases of a phenomenon. Whether or not this is possible depends on both the *precision* and *completeness* with which the class of a case has been defined and how representative it is for that specific class (George and Bennett 2005, 110). Based on George and Bennett's definition of 'class of event,' the central questions regarding

generalization are: What is this a case of? and What type of class of event is it?

The central phenomenon is the military intelligence institution. The possibility to generalize to other cases can be argued by claiming that the closer a case is to the core case, the greater the possibility there is to draw generalizations. An illustration of this can be made by using a circle with various layers, with the layers closest to the core displaying the greatest degree of similarity. For example, if the Swedish military intelligence case is in the center (i.e., taking the role of the core case), the second layer may be the Nordic military intelligence institutions, the third Western, and the fourth all military intelligence institutions. The same reasoning can be made to understand generalization outside the military context where the center unit is military, the second defense, third law and security, and the fourth all types of intelligence institutions.

This type of phenomena can also be understood not only by its labels (e.g. Swedish military), but also its characteristics. In this case, a knowledge-producing institution is produces knowledge conducted by several individual entities in a sequential process with several feedback loops.

Some questions can be formulated regarding the precision and completeness of the case. Is the Swedish case representative of other countries? Is military intelligence representative of other fields of intelligence? The answer to these two questions is determined by the degree to which the case is representative. For example, in contrast to defense or law intelligence, military intelligence has the responsibility to deliver information and intelligence (even borderline intelligence, such as weather forecasting and geographical information) regarding all actors who are not in their own forces.

It can be questioned if the specific types of intelligence assessments (e.g., threat assessments) can be seen as typical or representative of intelligence activity. Threat assessments are a routine activity and, therefore, are more likely to display evidence of institutional influence. Although the mechanism is the same for other activities, the strength of the influence is not representative. This influences the possibility of generalizing the results beyond the specific case in question. To what degree this applies will depend on which part of the result you want to generalize.

The focus of the research in this thesis is on rules-in-use, strategies, norms, and cultural views. Thus, a significant question is how many of these are representative to other countries' military intelligence institutions. Military intelligence institutions has a natural tendency to be closed, and foreign influences on them are thereby restricted. However, international operations (e.g., in Afghanistan, Kosovo, Liberia, and Libya) force military intelligence institutions to work transnationally and thereby increase the cultural exchange. In terms of the rules-in-use, the similarities between Western countries can be attributed to cooperation and membership in NATO; for example, in the Swedish case staff functions are strongly influenced by the NATO doctrines (Swedish Armed Forces 2010). Thus, the case study in this thesis does have significant potential when it comes to making generalizations. Likewise, generalizations can be made regarding other areas, such as public administration; for example, how institutions can theoretically influence the mental model of an adminis-

trator or analyst. In the case study presented in this thesis, there are similarities between Sweden and both the UK and the US regarding the rules-in-form, for example, the doctrines (see Article V).

In short, generalizations outside the main class of events studied in military intelligence institutions can be, to some extent, drawn to other intelligence institutions. However, generalizations are probably only possible regarding generic findings, and are not applicable to specific rules-in-use, theories-in-use, or belief systems.

3.3 Data collection and analysis

The data collection methods used in this thesis included interviews, questionnaires, and document studies. The interviews were conducted in a semi-structured format, and they were transcribed if the interviewee agreed to have the interview recorded. In general, information on the formal rules was extracted from official non-classified documents and handbooks. The rules-in-use and belief systems were derived from the interviews and questionnaires.

Interviews are considered to be a problematic method. The accessibility of the method and the low threshold for using them combined with the ease with which scholars can hide behind them make interviews what some scholars have defined as a "convenient launch pad for poor research" (Potter and Hepburn 2012, 555). However, there are few good alternative methods for extracting individuals' true opinions and insights; for example, what an analyst actually thinks about incident reporting (see Article I).

No method is epistemological neutral, and interviews are no exception to that rule. Both the research conducted and the framework presented for understanding intelligence analysis have a constructive foundation. As the author, I view myself as a reluctant constructivist wishing the world was simpler. The constructivist views the interview situation as the outcome of the constructivist's structure of the world as well as the given situation (Cassell 2005). As it is difficult to be totally objective in an interview situation or when analyzing the results, one should try to be consciously aware of one's own subjectivity (Cassell 2005). Although my understanding is a construction based on my own preconceptions, there is an objective reality. This is an important part, and the aim of my research is to be mindful regarding my own construction of this reality.

The interview primarily reveals the respondent's construction of reality and understanding this construction should be the aim of the interview, not an attempt to capture an objective reality. Consequently, the interview questions were formulated with this in mind. Examples of the interview questions included: In your opinion, what are the most essential steps in a threat analysis? In your opinion, what are/were the root causes, if any, to the insurgency in northern Afghanistan?

In short, the interview can be divided into four phases, which are similar to the intelligence cycle: planning, interviewing, analyzing, and reporting. When interviews are deemed to be the most appropriate method, two crucial issues should then be addressed: determining the target group and the best interview method. The target

group was the same for both Article I and the supporting case study; individuals who had been active in the intelligence section of the staff in Afghanistan.

Random sampling was not used, since the selection process focused on identifying individuals who met these criteria. In general, these individuals had participated in several deployments. It is reasonable to assume that they had given more thought to how they conducted assessments and why they did it in a specific way. In Article I, a snowball selection process was used, primarily based on personal contacts. In the supporting case study, both snowball selection and a direct questionnaire were used. This questionnaire was sent to all individuals who had served in a relevant position during the investigated period. The respondents' view of the questionnaire probably influenced their interest to be interviewed. Some of the respondents had a clear message they wanted to deliver. They were quite often critical to how the intelligence work had been conducted. The question that needs to be asked is how representative were these respondents for the target population. The risk is that those respondents who chose to reply are also more critical of the institutional rules and thereby less influenced by 'the institution.' A statistical researcher could have stated that there was a higher risk for a type II error; that is, the selection process of the sample influenced the outcome and resulted in the fact that there was less evidence of institutional influence.

However, it is important to remember that there are several positive aspects of using interviews. The main argument is that there are few other methods of data collection with the possibility to capture how individuals reason and view the world.

3.4 Research ethics and security issues

Conducting research on military, especially intelligence activities, creates specific dilemmas in regard to research ethics as well security and access issues. An example of this was a government investigation in the beginning of 2000 in Sweden (Jönnson 2000); the investigation became so politicized that it was difficult to conduct empirical research. The clash between the open world of research and the closed world of intelligence was obvious. For obvious reasons, access to certain data regarding intelligence is severely restricted.

On the other side of the coin is an example from Norway, a report written by Gledistche and Wilkes, "Intelligence Installations in Norway: Their Number, Location, and Legality." This report was highly controversial and ended up in what is sometimes called the rabbit trail ("puslespilldoktrinen" English: jigsaw doctrine)(NOU 2003: 18 2006; Agrell and Treverton 2015, 11). In the report, the two researchers reveal the location of several signal intelligence positions in Norway, which ended with both researchers being convicted and given suspended prison sentences as well as fines.

One of the main ethical guidelines in social science is that we should avoid doing harm to individuals or communities when conducting research (Israel and Hay 2006, 2). Although this is obvious, it not always simple to see what constitutes harm in this context; issues of harm and security go hand-in-hand. One problem area is in regard to interviewing. The praxis in academic work is that the interviewees should

be identified by their name. This allows for transparency and is one of the fundamental principles of academic research, which states that all sources used should be openly available for examination by other scholars. However, this principle goes against the need to protect the interviewee by remaining anonymous. In most of the conducted interviews in this thesis there was not a direct need to protect individual identities. However, it can be argued that the combination of these individuals could constitute a security threat and therefore should be protected. This was the case in the survey in the supporting case study when the Swedish Armed Forces requested that the combined list of names of the staff members be classified.

Although transparency is a key and well-respected principle in research, the names of research subjects routinely are masked, for example, in medical and psychological research in order to avoid any unnecessary harm to the participants. But deciding and justifying when the names should be protected is not an easy task. One way to attack that dilemma is to consider the purpose of the interview. If a person is a key respondent and they share "facts" that are of interest, then transparency is vital; for example, who says what in a political meeting. When the issue does not consider "facts" but rather the respondent's own thoughts or opinions, the need for transparency is lower and the need for anonymity increases.

In both Article I and the supporting case study, the purpose of interviews was to reveal how the individuals conducted intelligence analysis and their views of them. In these cases, the responsibility to protect the respondents weighed heavier than the need for transparency. The protection of the respondents also had a security dimension, since this information could be used to harm or manipulate the Swedish military and a potential adversary could use this information to assess the capacity of the Swedish Armed Forces.

In several interviews, specific sections were not transcribed or the recorder was turned off during parts of the interview. Information including names and capacities of collecting units (especially regarding IMINT and SIGINT) were deleted. However, the real danger occurs when this kind of data is aggregated and conclusions are drawn. On the one hand, it can be argued that all information about the Swedish military intelligence system, regarding the access or the need to resources, is harmful. On the other hand, if the research helps identify weaknesses and provides potential solutions for improving them, this negative effect is transformed into something positive. In other words, research on the functions and activities of military intelligence can only be justified if the findings are absorbed by the organization.

There is always a risk that an adverse counterintelligence organization could use the research findings to increase their effectiveness in deception, but the benefits (i.e., the possibility to strengthen assessments) are most likely outweigh the risks and, therefore, justify the research efforts. The case in focus, Afghanistan, also mitigates the negative consequences of the research. Possible shared beliefs regarding insurgency in Afghanistan are less threatening than, for example, shared beliefs regarding Russia's actions in the Baltic Sea, where Sweden has greater direct interests.

3.5 Research from within

I was deployed as an intelligence officer at G2 during pars of 2010 and 2011. As a result, I gained an inside experience of the institution. My own background as a non-commissioned officer in the intelligence branch has contributed to the fact that I am/was acquainted with or know several of the interviewees. Both these factors influenced the results of my research.

In some ways, I may share some of the existing beliefs of the institution. This means that I may have had problems, especially when conducting the interviews, both to see and detect shared beliefs as they were taken for granted by both others and myself. It is important to understand that my own experiences should not be seen as participant observation or any similar method. However, they have provided me knowledge about the terminology and in some cases have opened doors that otherwise may have been closed.

In conclusion, my personal experience can be viewed as both positive and negative. My ability was perhaps limited in questioning the beliefs within the institution. In other words, another scholar studying the same material may have been able to identify certain shared beliefs in the institutions that were difficult for me to detect. Thus, I may have affected the accuracy of the case study, even if the model was not affected.

4

SUPPORTING CASE STUDY

The findings from the supporting case study are presented in this chapter. The aim of the case study was to examine and identify the mechanisms of institutional influence on intelligence assessments. This supporting case study proposes a framework to connect and understand the mechanisms of institutional influence on intelligence assessments. This was done by applying the IAD framework and a supporting model connected to the creation of mental models in the context of military intelligence. The model presented in Chapter 2.4 is the theoretical foundation used to analyze the Swedish military intelligence institution that was active in Afghanistan between 2008 and 2012. Sweden's contribution to NATO's International Security Assistance Force (ISAF) began in 2001/2002. In March 2006, Sweden assumed leadership of a Provincial Reconstruction Team (PRT) responsible for four northern provinces. The Swedish forces worked with a smaller Finnish contingent. This case study focuses on threat assessments, which is one type of intelligence assessment.

This case study can be defined as an instrumental case study (Stake 1995) or an exploratory case study (Yin 2009), and it aims to contribute to theory development. The case study is based on the assumption that an institution influences the mental model used by the individuals within that particular institution. In order to identify how this influence is asserted, a causal mechanism between the two variables needs to be established. The mechanism is seen as the presumed causal pathways between the independent variable (institution) and dependent variable (assessments). The causal mechanism can, in part, be seen as being within the institution or as a chain of actions influencing the next action in the process.

Data was collected from seven interviews with former intelligence officers as well as a questionnaire distributed to all staff members who had a position in the Provincial Reconstruction Team Mazar-e Sharif and who worked directly with intelligence issues in the staff during a specific time period. The questionnaire was sent to 125 individuals and the response rate was 40%. Although the response rate was relatively low, no systematic bias could be found based on age, position, or years of experience.

4.1 The mechanism of institutional influence

The results indicated that there was a lack of pre-determined methods for how threat assessments should be conducted. The work itself appeared to be ad hoc. The general approach was to assess the existing intelligence on a particular subject. Several of the interviewees and survey respondents, when asked how they conducted a threat analysis, stated that the periodic threat assessments were based on previously conducted assessment. Some stated that this was primarily done on historical data and pattern analysis, although discrepant descriptions among the respondents occurred regarding these aspects. Several written guidelines and regulations exist for

how a threat assessment should be conducted. However, the doctrine and handbooks had not been effectively disseminated, and only 30 to 50% of the respondents admitted they had read them. Among the interviewees, there was some discrepancies regarding the relevancy of the available handbooks. Some suggested that the handbooks did not improve general knowledge or understanding, yet others found them as both useful and relevant.

Within the institution, several beliefs and theories-in-use existed that could have influenced the mental model created by the analyst. A shared epistemological view regarding intelligence existed; primarily, that it was an inductive activity and a reactive process. An example of the theories-in-use was the idea of the "five-dollar Taliban" and insurgents who were protecting the production and sale of narcotics; this example can be connected to the ontological beliefs. A belief system based both on the notion of the economic man and on some form of rational behavior connected to a materialistic motivation.

We can also conclude that an analyst constructs a reality based on his/her mental models and that they are structured and influenced by the institution. Both the shared belief system and the theories-in-use guide the analyst in searching for and processing new information and knowledge. The theory-in-use directly connected to the threat assessments was the threat component. A majority of the survey respondents and interviewees (68% of the survey respondents that had answered the question and six of the eight of the interviewees) said that they included three central factors: the intentions, capacity and opportunity of the actor. For several of the survey respondents, the written answer to the question "What are the main steps in a threat assessment according to you?' was only those three factors. An actor-centric approach was also mentioned by several of the respondents. The handbooks that guide intelligence analysis state that both an actor-centric view and the three central threat components should be used (Swedish Armed Forces 2010, 29–30). The majority of those who mentioned the threat components claimed that they had not read the handbook in question. This creates a risk for confirmation bias; that is, analysts search for an indication of intention In this case, analysts actively searched for indications of a specific actor's intention, and the mental model filtered the information that was seen as vital from that which was seen as unnecessary (noise). This view of an actor-centric threat analysis with the core components 'intentions' and 'capacities' is shared among a large part of the intelligence community (Vandepeer, 2011)

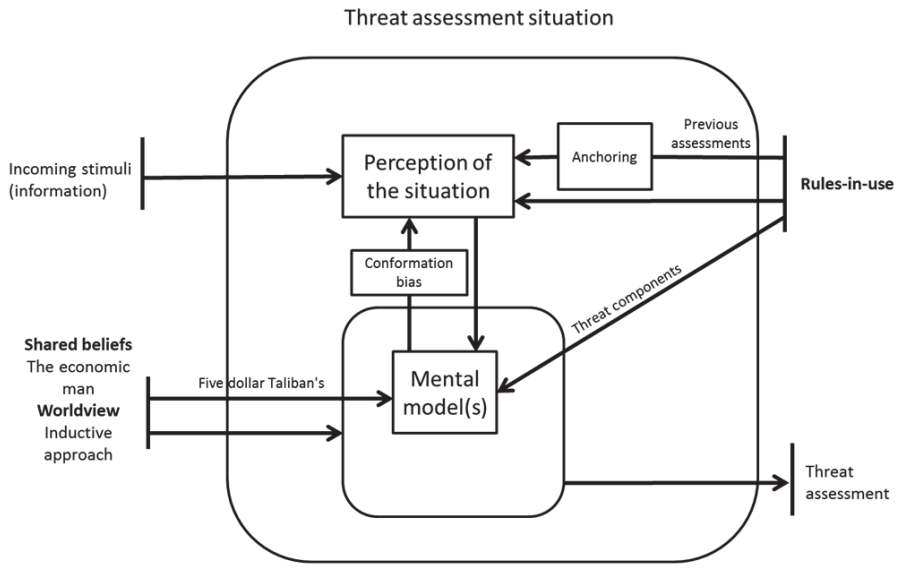


Figure 11: Action situation for an analytical process

The institutional influence on the assessment is described in the Figure 11. A central part of the outcome, which is illustrated in the framework, is how the incoming stimuli is interpreted. However, only parts of the available stimuli are used to create the perception of the situation. Active rules-in-use within the institution may directly control access to specific stimuli, or the rules-in-use may result in a cognitive bias that influences the view of specific stimuli. The perception of the situation is also influenced by existing mental models, which can have their origin in the institutions. As theories-in-use, mental models can shape shared beliefs or rules-in-use by determining, for example, what variables are of interest to understand a given situation.

5

INCLUDED PAPERS

In this chapter, the main findings from the five published articles included in this thesis are presented. The chapter is divided into two subsections with each focusing on how the articles contributed to addressing the main research question.

5.1 Mapping the intelligence process

5.1.1 Pitfalls in Military Quantitative Intelligence Analysis: Incident Reporting in a Low Intensity Conflict (Bang 2016)

Incidents provide key data for various reports and analyses produced by the military intelligence community. This article discusses the factors that affect the utility of quantitative methods in military intelligence analysis when used in a low intensity conflict. The first part of the article presents a general critique of the use of quantitative methods. The second part applies this critique to incident reporting in Afghanistan.

The critique can be distilled into six points which all are seen to have a negative effect on the utility of quantitative methods in intelligence analysis:

(1) The data available to intelligence organizations are off too poor quality to be used in quantitative methods.
(2) The low number of events or observations makes it less relevant to use quantitative methods within military intelligence.
(3) Some of the key elements of the data used by the intelligence community cannot be quantified without being misleading.
(4) War is a too complex environment for the application of quantitative methods.
(5) The methods are not appropriate for the questions that the intelligence community wants to answer.
(6) The procedural economics within intelligence organizations affect the utility of quantitative methods negatively.

However, this critique does not answer why or where in the process these problems originate. The critique is directed towards the consequences, not the cause.

All six points were evident in the case on incident reporting in Swedish military intelligence, and all points had both external and internal components that affect the utility. The first point highlights the fact that the available data can be inadequate. This can be a result of external factors (such as deception and denial) or internal factors that occur in the processing phase when data is transformed into information. Here, the central problem is not the quality of the data; it is rather the quality of the information, which can be a result of a lack of data coding routines or an

IT structure that hinders accessibility. In this case, the affecting variable is the working process and the working routines.

The main conclusion of this article is that military intelligence is bureaucratically produced as well as socially constructed and created in a distinct cultural context. Hence, understanding the system is crucial in order to predict how quantitative methods can be useful, if at all. To be able to understand the usefulness of analytical methods, there is a need to look beyond the methods and tools, and to understand their compatibility with the current cultural views and working processes within the system. Although there are external factors limiting the utility of the methods, there are, in the case of incident reporting in Afghanistan, internal factors that aggravate these problems. However, an organization often has the power to alter these internal factors but they need to be identified and understood in order to do that.

5.1.2 An examination of the implementation of risk-based approaches in military operations (Liwång, Ericson, and Bang 2014)

Today several nations utilize risk-based approaches in military planning. However, the discussion on the limitations of these approaches in regard to aspects such as uncertainties, the nature of the threat, and risk to civilians is limited.

The aim of this article was to identify important challenges when applying risk-based approaches to military activity. The article discussed risk-based approaches in general and their military applications primarily COPD in particular. Five generic quality requirements of risk analysis have been drawn from the research in risk philosophy. Two military application areas for risk analysis are analyzed in relation to these requirements: military intelligence and risk management in legal assessments.

The challenges identified in the analysis of the two cases are based on the five generic quality requirements stemming from the fact that process-oriented risk management models are applied to a reality that is anything but straight forward. The doctrines descriptions of risk management cover in detail the steps to perform (the process) but the guide to how quality is achieved in each step and the analysis as a whole is limited. To meet Hansson's quality requirements, the analyst needs to be provided more guidance on how to transform the complicated reality to a finite manageable scenario without sacrificing important information. Therefore, there is a need for describing how the general requirements on risk management stated in the doctrines can be reduced to specific requirements for a specific situation, especially in relation to the time span, the definition of the scenario, introducing necessary assumptions, and the consequences to be studied. There is also a need for a more explicit discussion on uncertainties; in particular, how they can be reduced and how they should be analyzed and presented.

In summary, risk analysis is an integral part of decision-making analysis and cannot be separated in time, space, or organization from the decision-making process in general. Defining the scenario to analyze, including the time span, is a central task in risk analysis and will affect every aspect of the risk assessment. Therefore, the principles for scenario definition must be communicated and continuously updated

throughout the organization. Managing uncertainties throughout the process is also important, especially if the aim is a resilient military system.

5.1.3 Toward Offensive Cyber Counterintelligence: Adopting a Target-Centric View on Advanced Persistent Threats (Sigholm and Bang 2013)

Although the traditional strategies for cyber defense in use today are necessary to mitigate broad ranges of common threats, they are not well-suited to protect against a persistent antagonist with access to advanced systems with exploitation techniques and knowledge of existing but yet undiscovered software vulnerabilities. The specific nature of cyberspace makes assigning responsibility and determining jurisdiction of cyber incident investigations uniquely challenging.

Addressing the threat caused by such antagonists requires a fast and offensive cyber counterintelligence (CCI) process and an efficient inter-organizational information exchange. In the case of the relatively young field of CCI, two of the main challenges are that it is hard to achieve situational awareness, and the process of attaining positive attribution is perceived as being ineffective. The current counterintelligence process is not suitable for the fast-paced CCI demands. To overcome such challenges, Clark's target-centric view of the intelligence process was, therefore, deemed suitable.

The attribution problem (i.e., finding out who is actually behind the aggression) is one of the main problems. One tentative solution to this is given based on a data leaking algorithm. One important factor to incorporate is that there is a compromise to be made regarding intelligence analysis to achieve optimal usage of new tools and have the ability and time to use them efficiently. In this case the rationale between false positive and false negative needs to be in line with the human analytical capacity to process the data. The model can, therefore, not only be optimized for detection rate. One conclusion in this article was that access to a new technology or a tool is insufficient and that new technology also needs to be incorporated into the doctrine and the military system, including user education and acceptance.

In general, the article proposes a framework for offensive CCI based on technical tools and techniques for data mining and anomaly detection as well as extensive sharing of cyber threat data. The framework is placed within the distinct context of military intelligence in order to achieve a holistic, offensive and target-centric view of future CCI. The main contributions offered are (i) a comprehensive process that bridges the gap between the various actors involved in CCI, (ii) an applied technical architecture to support detection and identification of data leaks emanating from cyber espionage, and (iii) deduced intelligence community requirements.

5.2 Evidence of institutional effect on beliefs and actions

5.2.1 A Shared Epistemological View within Military Intelligence Institutions (Bang 2017)

Understanding how military intelligence institutions function and the influence of the analysis they produce is central in any attempt to understand intelligence as-

sessments. This can be achieved in several different ways. In this study, the shared beliefs within the institution are in focus, as these are one of the elementary building blocks for this understanding. The intelligence doctrines from the US, the UK, and Sweden are compared based on how they define intelligence and related terms.

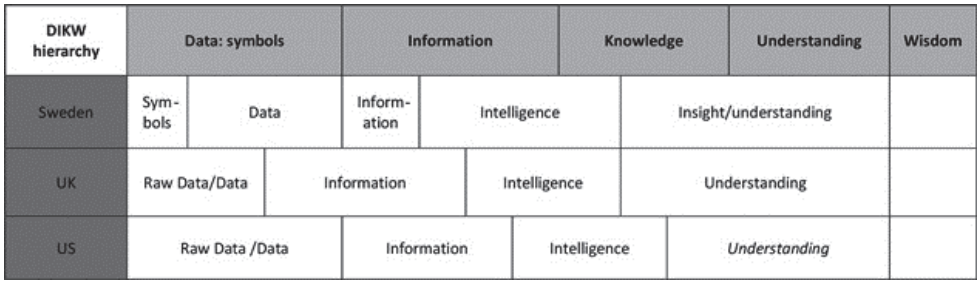


Figure 12: The different elements in the DIKW (Data Information Knowledge Wisdom) hierarchy in relation to each other. The relationship between the different variables should be seen as visualizations of the relationship and not exact values.

Despite some minor differences, the three nations share a common view and the fundamental building blocks of intelligence as a concept; for example, what the UK and Swedish intelligence officers classify as intelligence is sometimes labeled information in the U.S. These definitions of intelligence build in part upon something resembling the DIKW hierarchy: the Data Information Intelligence (DII) hierarchy. Therefore, the DII hierarchy can be considered the underlying theoretical assumption. This connection to an informatics perspective is nothing new. The connection to the DIKW hierarchy has often been made before being applied to intelligence in general. More relevant are the institutional connections, and the definition of intelligence as a concept. Linking the military intelligence institutions and the shared belief system regarding the fundamentals of intelligence and their relation to the epistemological view forming the assessments is useful, as is identifying the DII hierarchy as an underlying basic assumption in operational relationships.

The main conclusion is that there are similarities among the three nations indicating that some fundamental beliefs are shared by their institutions. This belief can be connected to the DII hierarchy and the epistemological assumptions connected to that view lead to several interesting reflections. The DIKW hierarchy has been criticized as being built upon a positivist paradigm.

5.2.2 Influences on threat assessment in a military context (Bang and Liwång 2016)

Anchoring is a cognitive bias that describes the common human tendency to rely too heavily on the first piece of information offered (the "anchor") when making decisions. The anchoring effect is a well-studied subject. This article connects the effect with the rules-in-use within a military intelligence institution, particularly the rules-in-use that dictate that an analyst takes his or her starting point from recently conducted assessments of the specific area or threat. Both the numerical threat assessment and the written assessment were affected. However, both the standard

deviation and especially the interquartile distance are smaller for the groups with an anchor compared to the corresponding ranges for the group without an anchor. (Figure 11).

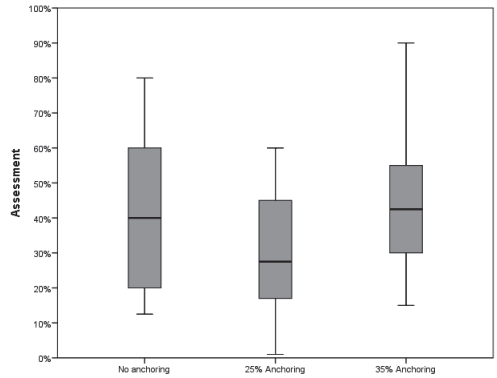
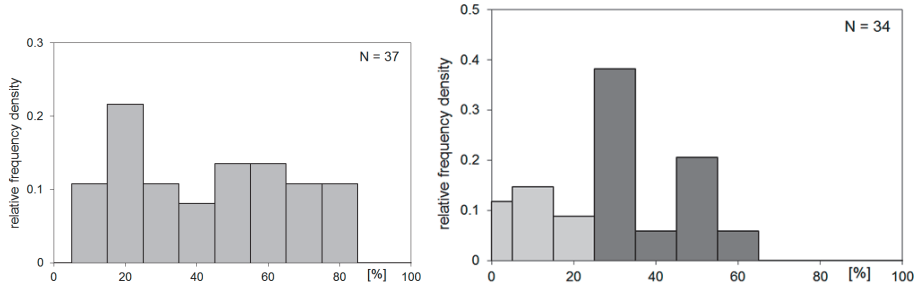


Figure 13: Boxplot over the probability assessments of an attack against the camp for the three groups.

When comparing the groups with the histograms in Figure 13, it can be observed that the assessments are distributed in a characteristic and different way if an anchor is given. For the two groups with an anchor, there is a distinct increase in the number of estimates that are above and close to the anchor. This suggests that there are at least two biases. The first bias is anchoring, as described in the theory section in this article. Anchoring influences mean estimates. The second bias can be observed as a cognitive heuristic or a form of a norm that also contributes to influencing the assessed threat probability. This bias creates the distinct increase that is close to and above the anchor value. This second type of bias is more pronounced for the less experienced subjects. For the 25% anchoring groups, there is a difference between the subjects currently enrolled in master level education and in bachelor level education. Two of the 19 subjects in bachelor level education gave an assessment below 25%; whereas, among the subjects in master level education, 8 of 15 subjects gave assessments below 25%.



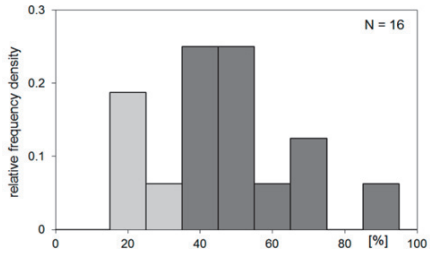


Figure 14: Bar distribution over the subjects' assessment in relative frequency density. From right to left: no anchoring, 25% anchoring, and below 35% anchoring. The darker grey areas are assessments that are the same or higher than the previously given assessments.

This result indicates that the subjects, especially the less experienced, showed an aversion to giving an assessment that was below the one previously given. From the numerical results, it is unclear if this is a conscious or unconscious bias on the part of the participants. The results show that officers have an aversion to lower a previously given threat assessment. Thus in order to understand risk assessments, there is a need to understand the methods used as well as the institutions in which they are used. This is especially relevant for military intelligence as the assessments are conducted in an environment of high uncertainty.

6

DISCUSSION

The different parts of this thesis contribute in putting together the pieces of the puzzle creating a picture over the causal relation between intelligence institutions and assessments. Thereby they all contribute to answering the overarching research question: How do military intelligence institutions influence intelligence analysis? Article I demonstrated that military intelligence is bureaucratically produced as well as socially constructed and created in a distinct cultural context; hence, providing a better understanding of the system in which an assessment is constructed is vital. Article II revealed the problems in the connection between the rules-in-form connected to the biophysical as well as organizational context. Although not using those concepts, the article also discussed the interactive relationship that exists between the intelligence holon and the decision holon. Article III explained the relation between incorporating new technical solutions with incoming stimuli (i.e., raw data). The supporting case study presented the mechanism of the institution's influence in the assessments. One of the rules found in that case study was later tested true in an experiment in Article V. Article V addressed the question regarding contrafactuals and isolation. Article IV focused on shared belief systems and epistemology. The relation between the formal rules and influence on beliefs was problematized from an institutional perspective. Article IV also gave some indications regarding the issue of whether or not generalizations from the study could be applied to other armed forces. Figure 1, presented in the beginning of this introductory summary, provides an illustrative overview of how the five articles contributed to answering the overarching research question.

The overarching research question for this thesis was "How do military intelligence institutions influence intelligence analysis?" The causality between an institution and an assessment is not an answer in itself since institutions' influence our behavior and thoughts is almost seen as something given. Nevertheless, it is the causality in the mechanisms and the mechanisms' link to the current theories on intelligence analysis that is of most interest here. The real contribution of this thesis is in its ability to show the link between an institution and an assessment, by drawing upon rules-in-use and belief systems and their effect on the mental model and consequently the perception of the situation connected to a cognitive bias and thereby its effect on a given assessment

It can be stated that the institution in which military intelligence is produced is a vital factor for understanding how to influence and change assessments. How an analyst constructs reality depends on his/her mental models and, in turn, how the mental models are structured and influenced by the institution. Shared beliefs and the theories-in-use guide the analyst in searching for and processing new information and knowledge. The findings here suggest that analysts actively searched for indications about a specific actor's intentions and that the mental model filtered that information based on what was perceived as vital vs noise. Thus, there is a risk of

confirmation bias.

The rules-in-use suggest that an analyst uses previous assessments as a starting point, and this entails a possible risk that new assessments are anchored to previous ones. Other strategies and norms indicate that the same theoretical link exists for how assessments are conducted and subsequently, an enhanced risk for cognitive biases. The rules-in-use directing the analyst to one specific area also result in an increased risk that the assessment will be framed to that area instead of being comparable to other areas. In other words, the rules-in-use affect how incoming stimuli (e.g., reports and data) are interpreted, thus influencing perceptions of the situation.

Analyzing the military intelligence service from an institutional perspective may help us to better understand what influences their assessments; it may also be a vital tool for reforming the policies that are currently in use. The framework used in this thesis combined with the indications of a causal relation reveals several factors that influence intelligence assessments. For example, some of the rules-in-use actually aggravated the risk for cognitive bias, such as anchoring and cognitive bias. Thus, the proposed framework can help scholars connect and understand the mechanisms of the various influential variables as well as provide a foundation for common terminology, which is greatly needed in the field of intelligence studies. By understanding the mechanisms and connecting the assessment with the independent exogenous variables, a better understanding of the process can be achieved and thereby the appropriate tools can be obtained for fostering change or influencing the outcome.

6.1 Theoretical and practical contribution of this thesis

The theoretical contribution of this thesis is primarily within intelligence studies and military science, although the theories and frameworks on which it is built come from political science and cognitive psychology. The model of the assessment situation (which also is the action situation) connects the institution (shared beliefs, rules-in-use, and incoming stimuli) with the outcome and thereby provides a framework for understanding intelligence analysis. Heuer stated that an analyst's estimation depends as much on the mental model used as the collected information (Heuer 1999, 62). This thesis has contributed to this claim by illustrating how an institution influences the mental model, and thus, it has advanced our understanding of intelligence analysis.

The largest contribution is, however, not the mechanisms but rather the framework in the same spirit as Ostrom's framework that provides a common language for scholars focusing on intelligence analysis in intelligence studies.

The lack of theories and literature in the field of military intelligence is a truth with modification. It is, however, not a coherent body of knowledge. In part, this can be a consequence of not going back and reading what has already been written in the field (Marrin 2016), but the lack of a common terminology is probably a contributing factor. That being said, intelligence scholars from different fields do not need to use the same terms, but rather need to build a coherent body of terms in order to be able to communicate and relate to each other.

Another theoretical contribution made in this thesis was enriching intelligence studies with elements from public administration, something which. This thesis can in part be seen an empirical case of that. Although it has not been the primary aim of this thesis, a theoretical contribution in field of public administration and new institutionalism can also be seen. By adding the complementary framework to understand the institutional influence on assessments and base this on the IAD framework it creates the possibility to travel up and down in the levels of holones with the same framework as base.

It can also be seen as a contribution to the public administration as intelligence analysis can be classified as an extreme type of highly bureaucratic and sectionalized knowledge produced in a governmental entity.

The practical contribution gained on behalf of this thesis is connected to the theoretical contributions: understanding how intelligence institutions influence and identifying tools for changing the outcomes. To understand this better, we can reanalyze the findings from the first two articles with the help of the framework. The research question in Article I is: What effect does the utility of quantitative methods have in military intelligence analysis? To answer this, there is a need to understand what affects the utility. One of the main findings of this thesis, although not the main finding for Article I, is that "intelligence is bureaucratically produced as well as socially constructed and created in a distinct cultural context" (Article I). In other words, it is not the methods themselves that are of interest, but the context in which they are used and operationalized in the institution. Quantitative or more specific statistical methods and their utility are hard to question if we look at their usage in an academic context.

Instead of strictly looking at the utility, it can be useful to ask what within the institution affects the utility. In the literature review (Article I), six points regarding the use of quantitative methods were identified as having a negative effect on the utility.

(1) The data available to intelligence organizations are often of too poor to be used in quantitative methods.

(2) The low number of events or observations makes it less relevant to use quantitative methods within military intelligence.

(3) Some of the key elements of the data used by the intelligence community cannot be quantified without being misleading.

(4) War is a too complex environment for the application of quantitative methods.

(5) The methods are not appropriate for the questions that the intelligence community wants to answer.

(6) The procedural economics within intelligence organizations affect the utility of quantitative methods negatively.

The different arguments against the use of quantitative methods can be divided into external and internal, where the internal can be seen as a consequence of the institu-

tion. The first point on the list, inadequate quality, is linked, among other things, to how the coding of data is conducted, or rather the lack of common rules guiding the transformation from data to information. The lack of rules, formal as well as informal, was seen as negative regarding structuring of data, but the same need was not perceived regarding the analysis. Regarding assumptions and conditions connected to statistical methods, the most influential variables are education and the choice of methods. However, this problem is not solved by simply teaching the analyst more about statistics or determining which methods to use; the analysts as well as the institutions need to trust and believe in the results. This is connected to shared beliefs. In other words, the methods need to be internalized within the institution's frame of accepted epistemological views.

Arguments four and five can be connected to the shared beliefs within the institution. The fact that war is a too complex environment is linked to the epistemological view and also the world view. When we understand this, we also understand that simply stating that statistical methods are fruitful or may be a vital analytical tool will not change the view of the institution. Even if some analysts are persuaded to use statistics, this might not improve the outcome. It might even be counterproductive if the methods are perceived as unreliable within the institution. Point five is similar and also connected to the shared beliefs, although it is hard to say if it is also part of the worldview.

Some factors that influence the utility of the methods lie outside of institutional control; they can be seen as part of the (bio) physical influence. They were defined as external factors and included deception, denial, collection capabilities, and time constraint. They provided the outer setting for the institution, the environment within which the institution is forced to act. Although these factors lie outside the institution's and its members' control, their effect can be mitigated if they are known and understood. For example, the effect of deception and denial, which is an integrated part of intelligence analysis, can be influenced through different techniques or collecting strategies. Time constraints entail that we need to understand the intelligence process as a system, i.e., nested holons. There is, for example, no need to collect better quality data if the analyst does not have the time to process it.

Article II of this thesis identified and discussed some challenges when applying risk-based approaches to military activities. The challenges are connected to the dissemination of risk analyses to decision makers and to the content in the analyses. Using the terminology from the framework, it involves the information transfer from the analytical holon to the dissemination holon. It is not only the tools or methods of analysis that influence an assessment; in fact, the guidelines and formal doctrines are also an important variable, the rule-in-form.

In 2005, an attack occurred in Mazar-e-Sharif and resulted in two Swedish casualties. After these first Swedish casualties in the Afghanistan operation, the Swedish Armed Forces identified the need to improve the risk assessments conducted within the organization. The incident lead to the revision of the mission itself and in particular to the risk management process, which started in 2006. The result of the revision was that new methods were set and published in the book *The Defence Forces Shared Risk Management Model* with the foreword written by the Supreme Command-

er of the Swedish Armed Forces, General Syrén (Swedish Armed Forces 2009). The overarching purpose of the publication was to provide a basis for substantive and transparent risk management decisions. Later, a lack of methods to support these efforts was identified and thus another publication, *Handbook Assessment of Antagonistic Threats,* was written to address this need.

In other words, the institution's attempt to improve assessments was to rewrite the rules-in-form. However, problems appeared when the doctrine and handbooks were not utilized by the analyst. In the case of Afghanistan, approximately 50% of the respondents read the *The Defence Forces Shared Risk Management Model* and 30% *Handbook Assessment of Antagonistic Threats*; only 13% had actually used the *The Defence Forces Shared* Risk *Management* Model and 8% had actually used *Handbook Assessment of Antagonistic Threats* (See supporting case study). Erwin Rommel supposedly said that the British write some of the best doctrines in the world, but fortunately their officers do not read them (MoD 2011, Army Doctrine Primer 2011, i).

What does all this tell us? It means that if we want to change the analytical outcome, (e.g., assessments) we cannot only change the doctrines i.e. rules-in-form or the organization, we need to change the rules-in-use as well. To do this we need to understand how they are formed and the mechanisms by which they influence. We also need to understand the shared beliefs and their impact. The core is that any doctrine, organizational change, or introduction of new techniques will need to be in line with its institution if it is going to give any real effect.

6.2 Future research

Drawing upon this thesis, three potential areas for future research could include: institutional analysis, threat assessments, and intelligence analysis.

Research on institutions and their impact on our actions is a large field. One interesting area in which more research could be done is measuring the strength of the institutional influence and how various degrees of it influence assessments and actions. For example, the influence from military institutions is most likely stronger than the influence from sports institutions. However, research along this path might provide interesting knowledge about what is important in the exogenous variables and the rules-in-use when assessing the institution's influence.

The framework used in this thesis needs to be tested more rigorously and further developed (i.e., simplified), including the relation between the analysts and the collection holon. One approach that might be fruitful would be to apply the model on an intelligence institution in a different sector, for example, law enforcement. One central question still unanswered in intelligence analysis is connected to the use of analytical techniques; that is, is the analytical result (i.e. the assessment for decision support) improved by introducing structured analytical techniques? Empirical experiments on the rule-in-use (similar to the experiment presented in Article V) that connect to structured techniques could help address this issue and provide some answers.

In the area of threat assessment research and experiments linked to analysts' aversion, lowering a given threat level is highly interesting. This is connected to terrorism threat levels, which are often discussed in the media. If we could improve our understanding of how the institutions' use and influence them, we might be able to increase their utility and accuracy.

Lastly, the claim that intelligence studies lack theory depends in part on how narrowly intelligence is defined. There are still several disciplines that could enrich intelligence studies. Intelligence studies is in many aspects a young academic discipline. In short, there are still many avenues for further research that can be pursued and there is still much more that can be investigated, written, and shared.

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